

# THE IRON AGE

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New York, January 16, 1919

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**IRON STEEL MACHINERY**

# THE IRON AGE

New York, January 16, 1919

ESTABLISHED 1855

VOL. 103: No. 3

## Training Women for Record Output

General Results Abroad and at Home—  
Diligence and Industry of Women—Practical  
System of Schooling on Shop Production Lines

BY ROBERT I. CLEGG



WOMEN have made an energetic entrance into the machine shops and have taken up the duties there with surprising results. Much of what might have been expected failed to occur. From facts brought to the front by war-time pressure, managers are checking up the totals of their observations and recasting their views in the light of

these fresher experiences of the industrial plants.

Results in the United States are not fundamentally different to those attained abroad. Women in Europe are doing all sorts of munition operations, turning and boring, milling and threading, planing and shaping, inspecting and gaging, as well as laying off work. One competent observer points out

that the English experience has shown that women are better at repetition machining than the repetition of fitting. That they excel in the former may be due to less exacting requirements, for while more monotonous by sheer repetition, there is in the fitting a constantly necessary attention to the various details requiring correction by hand manipulation.

The same line of reasoning doubtless accounts for the good work of women in the drafting room where they take up the semi-skilled and mechanical tasks of tracing with success. There are reported some cases from English practice where a girl is doing some of the graphical calculations in turbine design; another is carrying out electrical tests on armatures, and in our own country, girls are to be found, as in an instance at the Yale & Towne plant at Stamford, Conn., designing small tools very creditably. Nor is it at all unlikely that these women with their broader outlook and deeper insight may go beyond present far-extended limits in



Girl at Left Is Starting to Learn the Operation of a Small Screw Machine. Girls have acquired in from three to six days the ability to accomplish the task set for a man, and in many cases the production by the girls is greater than that by the men when the same standard of quality is maintained. The girl in the background is running a plain engine lathe equipped with a special attachment for a repetition job. The female instructor is checking the work done by the lathe-woman. On this particular job the instructors have trained girls in three days to perform the task assigned





Several Operators at Work on Drill Presses and Hand Milling Machines. The instructors are explaining the machines and the work to new operatives. On this class of work the instructors are able to train female operators in very short periods of time so as to obtain the production rates of output hitherto set for men

shop methods and improvements, should they in turn become planners of manufacturing.

Cores are made very successfully by women, and their deftness of touch and close observance of instructions do equip them excellently for this sort of labor. That they will go ahead in foundry work is beyond doubt, if only they be given a fair start. This will be provided when one of their own sex tackles the problem, though a surprising and most encouraging feature in this work has been the ability of men to instruct women with the greatest success in both the speed of the teaching as well as in its thoroughness.

Foundry work will have a serious barrier for women wherever the old crude equipment is used. But these tools for the heavy-handed are leaving the fingers of the skilled workman and either wholly assigned to the unskilled helpers or pushed aside by the greater outgrowing introduction of labor-saving machinery. An example of this is had in the transporting of sand from one point to another about the foundry floors. Open grids in the floor receive the sand and make walking less wearisome, conveyors transport the loads and elevate the supplies to hoppers above the molder's bench or floor where by the aid of easily controlled chutes the materials for the molder are released to fall exactly where and when he desires, then the modern machinery jolts or squeezes the mold to the proper density, and the pattern is mechanically drawn with a sureness of movement that the most dexterous of hand labor could not possibly equal.

Following this stage comes the inspection and correction of the job by the molder, a task where the experience of the competent conductors of shop schools is that a woman's close detailed regard for orders would make her services of the most promising kind.

Women are making their way as molders and will travel further and faster in this direction when their natural aptitude and easily acquired deftness for this particular skilled work is more generally recognized, cultivated and promoted.

Meantime, those women of the front rank, of whose progressiveness there is ample proof on every hand, show a lively interest in the possibilities of the work before them. They want to know what subjects can be studied by them to the best advantage.

They show a readiness to learn and to excel which is of the very essence of craftsmanship. Many of those at the Yale & Towne Mfg. Co.'s plant are relatives of other employees. It was easy to see where the impulse sprung to take up a new line of business with those already well known by reputation in the family circle.

Another means of contact was by a freely distributed card to the following effect:

#### THE YALE & TOWNE TRAINING SCHOOL

The training school at The Yale & Towne plant offers exceptional opportunities for men and women to become expert in skilled and semi-skilled work.

It is not necessary for one to have any experience in shop work, in fact some of our best operatives are those who had no previous shop experience.

Applicants are interviewed and are placed in the school on a class of work which we believe they can best accomplish. It matters not as to education as the courses are laid out in accordance with the education of the applicant. An applicant to be trained for tool work must naturally have a better education than one who is to be trained for a definite machine operation or bench job.

The training school is operated on a strictly productive basis and the working conditions are the same as in any of the rooms in the plant.

The instructors have been carefully selected and a new operative is taught to accomplish the task set before being turned over to the room in which they are to be permanently located.

The operatives are paid a fair hourly rate when learning and when transferred to the shop are paid the prevailing class rates.

If in doubt as to whether or not you would care to take up work of this nature our representative will be glad to answer any questions and explain the work more in detail.

THE YALE & TOWNE MFG. CO.

A part of one of the upper floors was set apart for a school and equipped with the necessary machinery. Here R. F. Bryant, the company's superintendent of the production efficiency department, installed a carefully chosen and competent teaching staff of men and women in charge of W. G. Palmer, chief of the instruction division.

From the very first two things were decided upon as landmarks along the way of shop education. One was the use of actual shop products and shop operations as the only materials and processes on which the training efforts of the trainers and the trained should be expended. There was to be no imitation of shop work. When a woman graduated from school to shop she went thoroughly informed of what she was to do and capable of doing it well. There were no misgivings on that head.

Secondly, and emphatically, no one in the plant must be openly unfriendly to the educational plan or in opposition to the women graduated. Plain



instructions were quietly conveyed to everybody concerned to the positive effect that this was no temporary experiment but that it had come to stay, and that no one could resist it or interfere with its successful introduction and operation without immediate danger of dismissal. There was not a solitary evidence of illwill. All co-operated cordially, and to-day the women have won a secure place in the esteem of their associates of the opposite sex.

Before we take up the actual records made by reason of the system of training, we may glance for a moment or two at these photographs taken in the school. They are all of women in training and were taken recently. Not one of these shop students had been at work in the school over a few weeks at most, in fact, for most operations and certainly for all machine work the limit is well inside six weeks. The records show that it is not even a matter of weeks in most cases, as a few days often bring about a skilled status that surprises and convinces the skeptical.

Women are trained readily to the capable use of instruments of precision. In their hands the micrometer soon acquires familiarity and a real understanding. It was rather shattering of preconceived notions to be told how close certain work was being done and the tolerance actually estimated for the questioner by the women in the usual vernacular style as so many fractions of a decimal.

They soon get the hang of the work to an extent that makes them far from raw material as inspectors of shop product. Capable of self-reliance and having the knowledge quickly at their finger ends they soon pick up the art of tool grinding and setting. In both these capacities and on all kinds of machines they have been tried out freely and successfully by the Yale & Towne management. Of course, it does upset a visitor's crude and uninformed sense of the eternal fitness of things mechanical to find a woman adjusting a machine that may be run by a person of the opposite sex. But that is no novelty at Stamford.

Getting the work up to speed by a student sometimes develops interesting results. Not infrequently it actually happens that a standard task and the rate therefor is obtained from a new operator which cannot ordinarily be got from other employees.

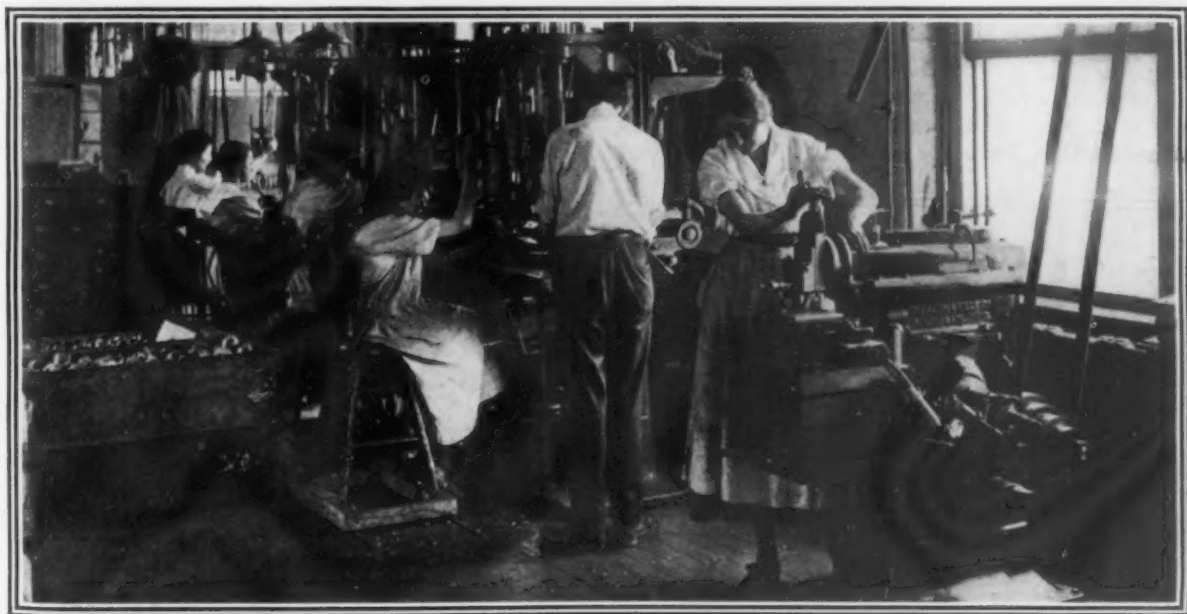
That question of production by the newcomer brings up several very apt queries that will occur at once to the shop manager's mind. To answer them it is necessary to look at the charts accompanying this article. These are exact productions taken from photostat copies which find their way regularly to the desk of Mr. Bryant. These charts show the life history of the worker, how quickly she progresses, the results obtained, and all the items, whether shop or personal, as the case may be, which bear on the present performance, the past preparation, and what is promised for the future.

A recent writer has intimated that there is something about certain nationalities that make the natives thereof better prospects for instruction in shop mysteries and machine manipulations. These diagrams prove something altogether different. They are the records of several nationalities and on that point alone the results are nothing less than negative, distinctly neutral, anyway. About the only thing that does have equal weight in all cases is that of health, mental and physical.

Mr. Bryant, after a long study of all that is readily found available in the literature of the subject, says that one good rule for the selection of employees is to try and remember the more successful of his school's graduates and then choose from the available list of applicants those as near like them as possible.

Considering the matter of education, it is found that those with the least common-school education do not show badly by comparison. This is not saying that education, all one can possibly get, is not a very valuable possession anywhere and especially in the machine shop, but it must be remembered that the majority of the women brought into the Yale & Towne plant during the stirring pre-armistice days were there to lend a hand quickly in Government work, to take up with the very least delay man's work and do their bit loyally. While it may not have been necessary for them to be particularly well educated, it was essential that they should be speedily adaptable to a very limited series of operations, not by any means to be after the kind of the old-fashioned all-around mechanic but simple specialists doing a few things orderly, systematically and with zest.

Curiously enough, the class from which some of



These Girls Operating Drill Presses Are All Handling Jig Work. Here is also a machine adjuster under instruction. The type of chair used by the girl operating the 4-spindle drill is said to greatly relieve the strain from reaching. Girl at the right had only been in training one week when she could set up and grind the tools for almost any plain job on the shaper.

the most desirable workers came, when trained, was a type that it is doubtful would have been sought if the seeker for help relied upon any comparison between previous duties and the new requirements. What, indeed, anyone might ask, is there comparable between scrubbing floors or washing dishes and the control of a drilling machine? Be that as it may, the sturdy Irish woman who shelved housework for the work of drilling took up a task that had discouraged several men. They quit where she won out. Moreover, she had never before been in a factory.

There may have been in that instance an overpowering masterfulness that demanded her evenings for her own, an intention not to be swerved that happened to take hold of a happily congenial occupation. The work and the woman prospered.

Probably the rate of pay was also a potent factor in attaining these remarkable results. The school stipend is a fair hourly rate during the learning period. When the operative has obtained the standard of quality and approaches the task set for the given operation her pay increases in accordance with the base or class rate. In many cases the task is exceeded, which, for the operative, means that her earnings, then, are larger than those of the average operative trained by the regular production-room staff.

Right here it is well to state that all tasks and rates are set by the elemental time-study method, and it is the policy of the company never to cut a rate, although mistakes are sometimes made where tasks and rates are set. When errors are made the company accepts the situation and proceeds on its way, feeling that the workers should not be discouraged by the correction of mistakes that are not rightfully theirs.

Another point of importance is in regard to the girls who come direct from a public school or from work at home. They have absorbed none of the bad habits that are to be found in some factories;



This Girl Operates a Hendey Lathe. She is being trained to make plug and ring gages and execute plain turned work such as taper shanks, arbors, spindles, etc. When the girl had been in training at the school only six weeks, she was able to work from blueprints, read and use the micrometer and scale, and grind all the tools she used.

shop politics and shop politicians are unknown to them. Their only purpose is to make good; their one object to do exactly as they are told. The girl who knows not factory customs is not prepared to agree that, "We only do so many for a day's work."

Factory operatives are too often inclined to favor the one who cannot produce as well as his or her associates. Let there be one somewhat slower than the rest and it is usually only a question of time when the fast ones approximate the laggard's speed. The reason is the firmly fixed fear that there is never any too much work for all, and that it is not fair to put a poor workman in the

way of being fired. The newcomer who has been trained in the school goes the limit. He or she has nothing to unlearn.

Mr. Bryant, in the course of his explanation of their shop-school system, made some pithy observations as to the success possible with women students. He found that on light work and on such machine operations as drilling and milling they are as capable as men. Few accidents had ever taken place with women as victims. Of course, all the pulleys and spindles were thoroughly housed. Women were told that they must never brush out jigs or dies or fixtures with their fingers. They must have tight sleeves, no loosely flowing ties or ribbons, and no jewelry. To turn one's back to a moving belt is all the more dangerous when the hair is long and but little restrained.

Given this instruction as to care of themselves among machinery, and also put in the best position to make the fullest possible use of the machines to which they are assigned, they are not abandoned to their own devices by any means. They are kept up to concert pitch, as the musicians say, by constant supervision, so that they do not fall below the records they have themselves established in their school practice, for each woman knows what she can do. That gives her self-assurance and she goes



A Group of Girls Being Taught to do Bench Assembling of Lock Device. An instructor at the second bench is explaining to a newcomer the various essentials of this work. On account of the very difficult nature of this work, the average time to train a woman to perform it properly is three months.

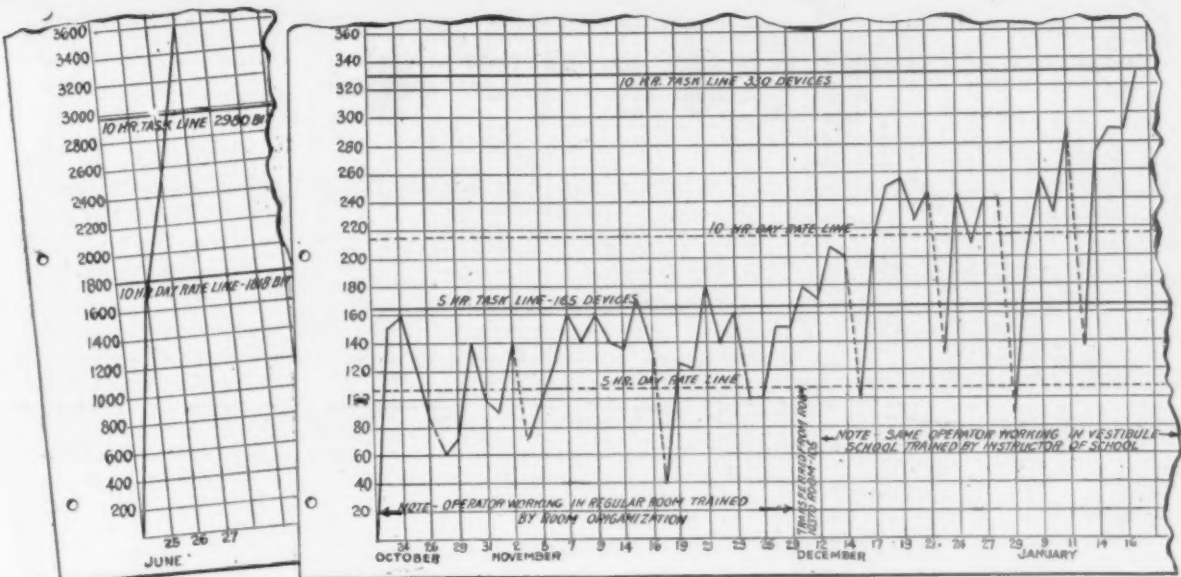


Fig. 1—Woman's Record, Clock No. 9008  
Nationality—American  
Education—Grammar school, 6th grade  
Experience—Domestic service  
Age—16 years  
Height—5 ft. 3 in.  
Weight—138 lb.  
Health—Good  
Instructor—Mrs. Howard  
Job—Ringing, curb bit cheeks  
Minimum time taken to meet the hourly task for a period of 10 hours—3 days

Fig. 2—Woman's Record, Clock No. 9011  
Nationality—Italian  
Education—Grammar school, 7th grade  
Experience—Paper box making  
Age—16 years  
Height—5 ft.  
Weight—113 lb.  
Health—Good  
Instructor—Mrs. Howard  
Job—Set up, lock devices  
Minimum time taken to meet hourly task for period of 10 hours—55 days

forward to her appointed task with every confidence. In effect, one of the primary things given the women by their careful, systematic, encouraging training is that they lose all shyness of machinery. Full of sound, well-founded self-reliance, they pay no attention to their working associates because they know they have nothing to learn in that direction, and there being nothing to gain there is no incentive to waste time on following up what others have to do or are at work upon. Much valued time is lost in many shops by the stranger getting acquainted with the job, in the finding of things necessary to do the work, in locating supplies well known to everybody else but which are usually found by wasting their time and that of the newcomer in

the most useless and often in a way the worst timed of all discouragements. A follow-up system is in use by the school instruction force. Every graduate is interviewed each day by a representative for a period of 10 days after she goes to work in any of the regular production departments. Helpful and sympathetic inquiries are made of her directly. Does she find everything all right? Is she being treated right by those with whom her work brings her in contact? Is she shown properly what is required of her? These and similar investigations ascertain if anything more can be done to make the work and the surroundings congenial in every way to a stranger. The result is that 90 per cent of the persons trained

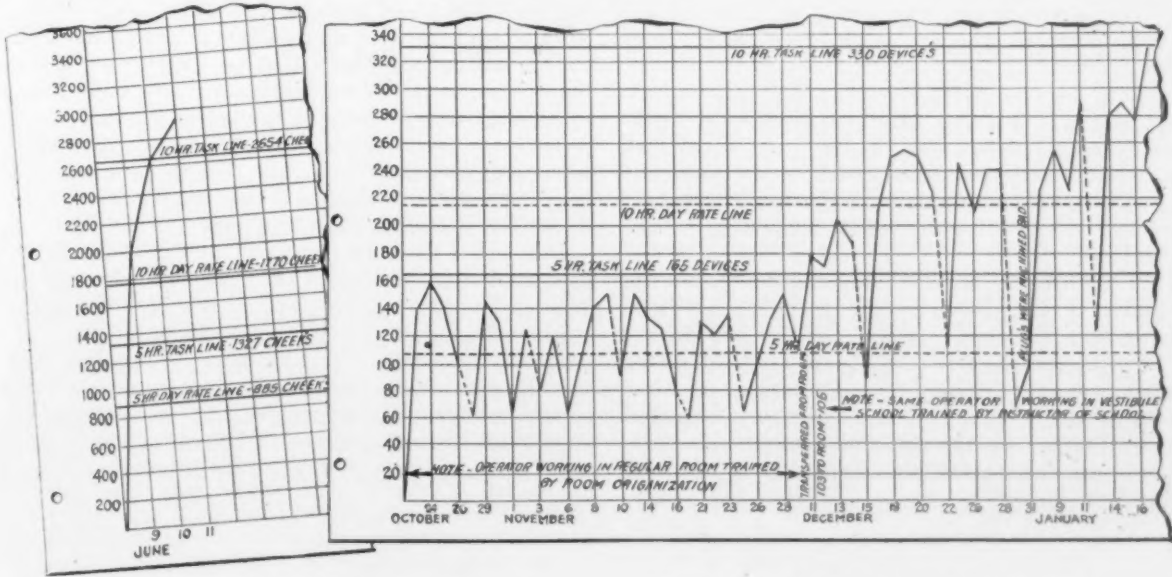


Fig. 3—Woman's Record, Clock No. 9034  
Nationality—Irish  
Education—Grammar school, 6th grade  
Experience—Domestic service  
Age—33 years  
Height—5 ft. 7 in.  
Weight—156 lb.  
Health—Good  
Instructor—Mr. P. Davenport  
Job—Drilling bit checks  
Minimum time taken to meet hourly task for a period of 10 hours—3 days

Fig. 4—Woman's Record, Clock No. 9007  
Nationality—American  
Education—Grammar school, 8th grade  
Experience—Bookbinding  
Age—18 years  
Height—5 ft. 6 in.  
Weight—112 lb.  
Health—Good  
Instructor—Mrs. Howard  
Job—Set up, lock devices  
Minimum time taken to meet hourly task for period of 10 hours—55 days



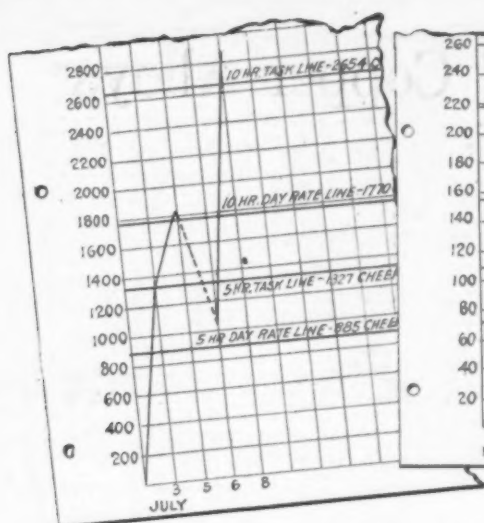


Fig. 5—Woman's Record, Clock No. 9023  
 Nationality—Swedish  
 Education—Grammar school, 7th grade  
 Experience—Factory bench hand  
 Age—20 years  
 Height—5 ft. 7 in.  
 Weight—110 lb.  
 Health—Good  
 Instructor—Mr. P. Davenport  
 Job—Drilling bit cheeks  
 Minimum time taken to meet hourly task for period of 10 hours—35 days

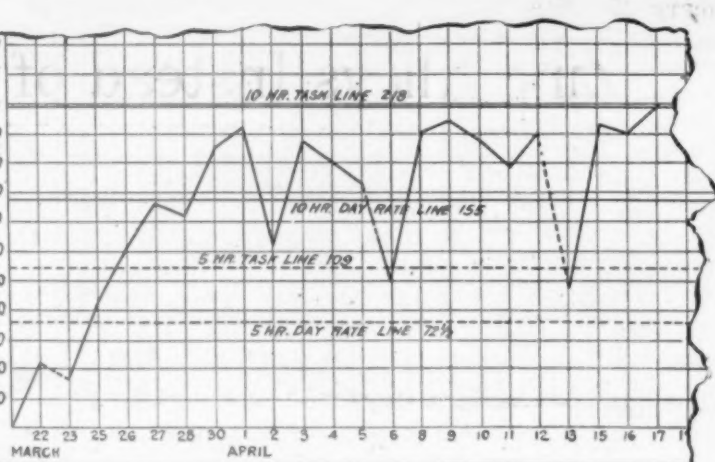


Fig. 6—Woman's Record, Clock No. 9021  
 Nationality—American  
 Education—Grammar school graduate  
 Experience—Paper box maker  
 Age—16 years  
 Height—5 ft. 6 in.  
 Weight—125 lb.  
 Health—Good  
 Instructor—Mr. P. Davenport  
 Job—Assembling  
 Minimum time taken to meet hourly task for period of 10 hours—20½ days

by the school stay. As one instructor explained tersely: "They are on to the job, they make good money, and can hold their own with anybody. Why wouldn't they like to stay?"

Moreover, as to this very important matter of pay, the newcomer is entirely different in her attitude. She does not see that question from the point of view of the old-timer; her mental viewpoint is not the same. To her the company is a means of supplying funds to her in a fair proportion to what she gives. Actually, she is a partner, the company sharing with her the proceeds of their united enterprise.

The tendency for an old hand is just to make, as one Connecticut employer said in talking with the writer on this very angle of the situation. He spoke with records before him of several whose daily piece-work pay was a very close average, running almost the same from week to week on the pay roll. Persons who are doing their best do vary in the quantity of their output, though, of course, the quality does maintain a uniformly high standard of excellence. The very effort to produce a maximum makes for inequality in the amount of work done. Not every one can reach their objective though they do their utmost. Hitting the target is not the result of every shot though it be the constant aim.

This difference between the stagnant and the aggressive is well shown by the graphic records of transferred employees. Note how the low record continues under factory conditions even of every progressive type. These are sadly typical of what goes on in many plants. The employee is satisfied to go no further up the scale of progress, in fact, is quite often thoroughly convinced that it is out of the question for her to even dream of doing better.

There are the cases of those who don't care to make an effort and whose labor is very ordinary as regards their shop values. But there are many capable of other things than mediocrity, and when given favorable environment they soon show a vigorous response. The records speak for themselves in no uncertain way and show that the effort of the determined and successful is a very uneven path compared to the smoother curves plotted of the unenterprising and therefore ill paid short-sighted workers.

How far women can be trained to do shop and foundry work is as Mr. Bryant says, merely the limit of the training faculty of the teaching force in any plant, the ability to impart the necessary knowledge and the willing patience to carry through an approved practical system of technical instructions. This does not claim that a woman trained in a short time to operate a machine-shop device is therefore a machinist. To make her equal to the emergencies met with ease by those of long experience requires much time and that continued apprenticeship by which the craftsman progresses during his life's labors. So as a means of making munitions, particularly while the Government was hard pressed for supplies, the speedy instruction of women was a national duty and the results abundantly prove that many of our established notions, deep-rooted in the mire of prejudice, are wrong. Women have done a patriotic service for the industries and in doing so have demonstrated the very essential agencies for maximum production that may be secured by the installation in a plant of a competent force of instructors who devote their energies to the education of promising individuals and their adjustment to the best interests of their employers.

The Irving National Bank, New York, has issued a graphic trade chart and commercial map of Latin America, which is the latest publication in the Irving foreign trade series, expressing graphically for the benefit of the importer and exporter a large number of facts. Much information is given in small space concerning area, population, imports, exports and other forms of information relating to Latin American trade.

The Shenango Furnace Co., Oliver Building, Pittsburgh, has just issued its annual book of analyses of its Lake Superior Bessemer, non-Bessemer and silicious iron ores. The company gives trip capacity of Lake freighters for the season of 1918, when there were 379 ore vessels in the service, with a total capacity per trip of 3,036,900 gross tons. Other valuable data are given.

# Zinc Alloys Instead of Copper Alloys

## French Experiments on Certain Combinations of Zinc, Aluminum and Copper as Cast, Rolled or Drawn Under a Press

The influence of the war is evident in a paper by Leon Guillet and Victor Bernard in the *Revue de Metallurgie*, Sept.-Oct., 1918, which deals with zinc alloys, because of the desire to find metals to replace certain copper alloys. The objects followed in the investigations were.

1. To establish the influence of copper and aluminum on the properties of zinc. For this purpose the alloys contained increasing amounts of copper and aluminum up to 10 per cent, and were examined as cast, rolled and drawn out under a press.

2. To examine some of the ternary zinc-copper-aluminum alloys. The following series of alloys were prepared:

- Pure zinc (lead 0.5 per cent).  
Ordinary zinc (lead 1 per cent).
- Ordinary zinc with 1, 2, 3, or 5 per cent aluminum.
- Ordinary zinc with 1, 2, 4 or 6 per cent copper.
- Ordinary zinc and 2 per cent.  
Aluminum with 2, 4, 6 and 8 per cent copper.
- Ordinary zinc and 4 per cent.  
Aluminum with 2, 4, 6 and 8 per cent copper.
- Ordinary zinc with 8 per cent.  
Aluminum and 4 per cent copper.  
(German type of alloy.)

3. Further, for each alloy hardness and shock tests were made at varying temperatures, so as to define as closely as possible the maximum forging temperature.

The actual analyses of the alloys is shown below, the samples being taken from the bars cast in sand:

Table of the Analyses of the Alloys

Alloy No.	Zinc, Per Cent	Aluminum, Per Cent	Copper, Per Cent	Lead, Per Cent	Iron, Per Cent
1.....	98.84	Trace	....	1.15	Trace
2.....	97.80	1.12	....	1.08	....
3.....	95.93	2.51	....	1.53	....
4.....	95.47	3.11	....	1.04	....
5.....	93.10	5.76	....	1.14	....
6.....	97.95	0.07	0.85	1.10	....
7.....	97.52	....	1.30	1.10	....
8.....	94.67	....	4.21	1.10	....
9.....	92.36	....	6.44	1.06	0.09
10.....	89.83	Trace	9.07	1.06	Trace
11.....	94.79	2.01	2.00	1.27	....
12.....	93.31	2.18	3.66	0.80	....
13.....	90.85	2.23	6.01	0.85	....
14.....	88.31	2.24	8.20	1.10	....
15.....	99.43	....	....	0.51	....
16.....	92.60	4.45	1.89	0.98	....
17.....	90.83	4.45	3.81	0.85	....
18.....	88.96	4.41	5.73	0.91	....
19.....	87.18	4.41	7.60	0.80	....
20.....	86.60	8.53	3.85	0.98	....

It was not found possible to roll the alloys 9, 10, 13 and 14 at the works of La Vieille Montagne, and no effort was made to roll alloys 16 to 20. A detailed table is given in the original paper of the tensile test, hardness, and shock test results on the bars cast in sand, rolled, and drawn out under a press, and from these results the authors draw the following conclusions.

First: The cast alloys present no particular interest, with 8 per cent copper it is true that a tensile strength is reached of 24,180 lb. per sq. in., but there is no ductility or resistance to shock.

Second: The rolled alloys are more interesting. For instance, Alloy No. 4 with 3 per cent aluminum gives 32,710 lb. per sq. in. and 15 per cent elongation, and Alloy No. 12 with 2 per cent aluminum and 3.6 per cent copper gives 45,510 lb. per sq. in. and 5 per cent elongation. These rolled alloys, however, are all very low in elongation to say nothing of resistance to shock. It must not be forgotten that rolled zinc shows a tensile strength of 21,330 to 22,760 lb. per sq. in. and 35 to 47 per cent elongation depending on its purity, particularly in regard to the percentage of lead.

Third: The alloys drawn out under a press are without doubt superior to those that are rolled. This

is not so noticeable in the case of zinc, but attention must be drawn to the following results:

Alloy	Mechanical Treatment	Tensile Strength, Lb. per Sq. In.	Elongation, Per Cent	Shock
No. 3 with 2.5 per cent aluminum	{ Rolled	31,290	4.4	1.2
	{ Drawn out	36,840	26.4	2.5
No. 7 with 1.3 per cent copper	{ Rolled	32,710	1.5	1.8
	{ Drawn	43,380	27.9	1.9
No. 8 with 4.2 per cent copper	{ Rolled	43,380	7.3	1.2
	{ Drawn	47,650	22.0	1.6
No. 12 with 2.1 per cent aluminum and 3.6 per cent carbon.	{ Rolled	45,650	4.4	1.2
	{ Drawn	53,190	16.1	1.2

The shock tests were made on a Mesnager machine with a Guillery head. It should be noted that certain alloys, Nos. 9, 10, 13 and 14 that could not be rolled, were successfully forged under the press. They gave high tensile strength but low ductility.

Fourth: The aim was to produce an alloy capable of replacing brass with a tensile strength of 39,820 to 45,510 lb. per sq. in., an elongation 30 to 25 per cent, and resistance to shock of 3 to 5. This aim is almost reached with the following alloys: Ordinary zinc containing 1 to 1.2 per cent lead with 1.5 to 2 per cent copper, which gives when drawn out under the press 42,670 to 44,090 lb. per sq. in., 27 to 28 per cent elongation, and a shock figure of 2. Also alloy No. 20 with about 4 per cent copper and 8 per cent aluminum which gives when drawn out 51,200 lb. per sq. in. and 24 per cent elongation. However, all these alloys have low resilience, much less than that of brass.

The next two sections of the original paper deal with the microscopic and macroscopic examination of these alloys. Then comes a section on their hardness, as shown by the Brinell tests using 1000 kilograms pressure and a 10 mm. ball, both at ordinary and higher temperatures, and subject to the results of these latter tests a rolling and forging temperature of 125 to 130 deg. C. was accepted generally, and used in working down all the alloys.

G. B. W.

### A New Tinless Bearing Metal

Letters patent have been granted W. D. Berry, president Berry Metal Co., New Brighton, Pa., for a tinless phosphor bronze bearing metal. During the war and while the Government was pleading for every one to conserve tin, Mr. Berry made experiments, the outcome of which resulted in the development and perfecting of a bearing metal alloy without the use of tin. The Berry Metal Co., which is the sole manufacturer of this alloy, was organized last June by Mr. Berry and his son, Walter V. Berry, who is secretary. Plans are being made for additional buildings, which will add 3000 sq. ft. to the present floor space.

The Engineering Index, published for 25 years in the *Engineering Magazine* and its successor, *Industrial Management*, and universally regarded as the standard index to engineering periodical literature, has been acquired by the American Society of Mechanical Engineers and hereafter will be compiled and published by that society. The first issue of the index under its new management appears in the January number of the *A. S. M. E. Journal*.

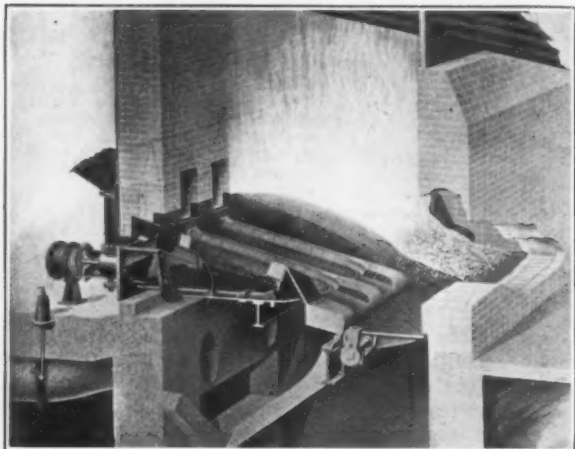
The Electric Furnace Co., Alliance, Ohio, has closed a contract with the Braeburn Steel Co., Braeburn, Pa., for a large continuous recuperative annealing furnace for the annealing of alloy steel bars and wire. This furnace will have a capacity for annealing 75 tons per day and an electrical capacity of 600 kw. One of the special features of this furnace is that provision is made for heating and cooling the material slowly.



## A SELF-CLEANING STOKER

Under-Feed Device Has Been Under Test for Two Years—Flexibility a Feature

An automatic self-cleaning under-feed stoker has been developed by the Under-Feed Stoker Co. of Amer-



This Under-feed Mechanical Stoker Automatically Removes Ash and Refuse From the Fuel Bed. Fresh charges of coal are pushed backward and upward by the steam ram and air and coal are automatically controlled

ica, Chicago. For over two years the device has been in use in plants burning different grades of coal under widely varying load conditions.

The steam cylinder in front of the hopper operates a ram. This pushes a charge of fresh coal from the hopper into the magazine supporting the fuel bed. As the coal goes forward it moves the previous charge of coal slightly backward and upward, the action being intermittent, and feeds fresh coal from below. Heat from the incandescent zone above drives the volatile gases from the fresh coal before the actual burning takes place. The gases mix with the air admitted through the tuyeres and the mixture passes upward through the hot fuel. The gasless coal or coke is forced to the upper part of the fuel bed, the incandescent zone, by the new fuel, where it burns with the gases coming up, the process giving a coke and gas fire.

The intermittent movement of the fuel pushes the entire burning fuel bed, with ash and refuse, slowly toward the rear. It is not a gravity movement, as the slope of the retorts is not sufficient to cause the ash and refuse to slide or roll toward the dump plate. As the refuse accumulates on the balanced dump plate, the latter is dropped, allowing the ashes to fall into the pit below. This is the only manual operation called for by the device.

Both air and coal supply are automatically controlled by the steam pressure subject to independent regulation. A drop in steam pressure brings increased fuel and air, while an increase in pressure brings a lower fuel and air supply, maintaining a steady pressure regardless of variations in load. The uniformity of pressure is shown by the flow meter and pressure charts. Flexibility is given by the wide range operation of the air and coal supply and by the provision of independent operation of each retort in a battery. A maximum of coal can be fed into the stoker when necessary. A large coal burning capacity is insured by the design of the tuyeres.

Observation doors are built in the front setting opposite each row of tuyeres. The fireman can use a

slice bar should any clinker formation be noticed on the tuyere blocks. If a hole is found in the fire it can be filled by feeding more coal to that retort. By a sieve test of the manufacturer it has been shown that approximately 75 per cent of the total ash goes through a 2-in. mesh, and 85 per cent through an 8-in. mesh, while analysis disclosed but a small amount of combustible in the ash. As there is no fire on the dump plate there are no clinker formations on the bridge wall and side tuyeres prevent clinkers on the side walls. The steam consumption in the cylinders is reported about equal to that required to run the engine of any mechanically driven stoker of equal size.

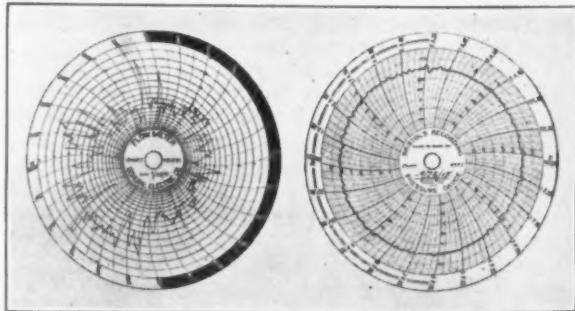
The action of the steam ram can be stopped by any foreign substance that may get into the hopper, and when the obstruction is removed the ram resumes operation. The only moving parts within the furnace are the pusher rods and blocks, and these are below the incandescent zone. The tuyere blocks will burn out, but can be replaced as each block is held in the retort by a rod which may be removed from the front of the furnace, and then a new block slipped into place without greatly disturbing the fire. The stoker requires but little space and a deep excavation is not necessary.

### Proposed Canadian Institute for Research

At a meeting of the Reconstruction and Development Committee of the Cabinet, Ottawa, Ont., Dr. A. B. Macallum, administrative chairman of the Council for Scientific and Industrial Research, advanced the long considered proposal of the council for the establishment of a central institute for research. The scheme which is considered vital to a successful and permanent Canadian competition with the highly organized industries of the United States, Great Britain France and other countries which have already the benefit of similar Government institutions, contemplates the immediate erection, at or near Ottawa of a central laboratory building costing approximately \$500,000, in which machinery and equipment costing \$100,000 will be installed. The building as planned will provide room for expansion as the needs develop, but will, at first, have accommodation for some 50 laboratories covering all the essential industrial research subjects. In a general way it is designed to fulfill for Canada the functions now performed for the United States by the Bureau of Standards at Washington and the Mellon Institute at Pittsburgh. It will provide modern scientific equipment and methods for the investigation of Canadian raw materials, industrial processes and manufactured products. It will serve as a national laboratory for standards for testing materials, for the discovery of methods of utilizing by-products, and for experimental work in the application of science to industry.



The Balanced Dump Plate Is Shown Dropped Allowing Dead Ash to Fall Into Pit Below



Flow-meter and Pressure Charts Taken by the Michigan Limestone & Chemical Co., Rogers City, Mich. They show uniform pressure maintained under widely varying load conditions



## Finding Situations for Mustered-Out Soldiers and Sailors

The Waterbury Plan of handling labor, and which has been so effective a factor in reducing the local turn-over of labor, has recently had an important addition to the series of blanks illustrated some time ago in THE IRON AGE.

The latest addition to the ingenious set worked out by Superintendent Ralph H. Budd of the U. S. Employment Service, Department of Labor, in collaboration with Waterbury (Conn.) manufacturers, enables the rehabilitation of the soldier to be carried on most helpfully for everyone concerned and is already put to excellent use.

As will be seen from the heading of the blank, the plan contemplates the co-operation of the Waterbury chapter of the American Red Cross, and this assistance has promptly and ardently been volunteered and utilized. The part undertaken by the local office of the U. S. Employment Bureau is to see that situations are secured for the returning soldiers, and with the expressed determination of the employers that places must be found, Superintendent Budd is steadily keeping up with the stream of applicants.

It is not intended that the plans to care for returned and discharged soldiers and sailors shall necessarily apply to others than those recruited in Waterbury and having in some sense residential claims upon this locality. With this reservation there has so far been no difficulty in absorbing the supply of such help at the rate it applies for positions.

This readiness and capacity to assimilate the supply has been benefited by the fact that certain standard industries were more or less depleted of workers when there came the insistent and continued pressure to turn the energies of peace over to the production of war necessities. Thus a local clock company was short of 1500 employees who are now coming back to assist the former employer to make up for lost time.

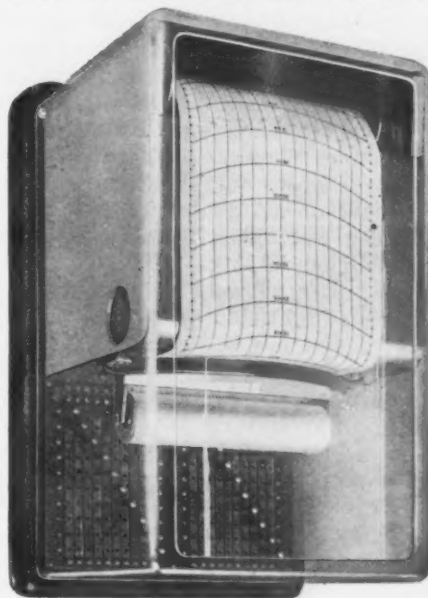
When the soldier again turns to the industries he may need a temporary financial aid. Pay days may require anticipation to some extent. In order to systematize this condition and have it controled and administered with the least possible friction for the applicants, the local chapter of the Red Cross manages this phase of the enterprise. As will be seen the report blank covers this provision fully, so that the one record when first prepared is competent to care for all the requirements and the movement of

the applicant from one to another of a group of clerks, and the irksome repetition of many explanations in various offices are cut down to a minimum.

The plan is simple and is already working smoothly and successfully at Waterbury.

## Multiple Recording Pyrometer

A new and simple multiple recording pyrometer has been developed by the Hoskins Mfg. Co., Detroit. It is



The New Hoskins Multiple Recording Pyrometer Will Make from One to 10 Temperature Records. Each record appears as a series of red-linked dots

operated with chromel thermo-couples which the user can make himself.

The meter will make from one to 10 temperature records. When 10 records are being made the temperature of a given furnace is recorded every 10 min., and when used as a single-point recorder, the record is practically continuous. If less than 10 temperatures are being recorded, greater frequency of readings can be obtained for any desired thermo-couple by properly locating the plugs in the switchboard as shown in the upper part of the illustration.

The record appears as a series of red-inked dots, and when the temperature of a given thermo-couple is being recorded, three readings are indicated within a one-minute interval, when the temperature of the next furnace commences to be recorded.

The moving parts are few and are operated by a solenoid energized by a lighting circuit. Every 20 sec. this solenoid advances the paper chart, and at the end of each minute changes the rotary switch over to the next thermo-couple circuit.

## Metal Cutting Tests with Stellite

In the letter published in THE IRON AGE of Jan. 9 from R. Poliakoff on metal cutting tests with Stellite a mistake was made in printing the table of performance of tests. Instead of "length of cut" the fifth column should have been headed "duration of cut," and the figures below expressed in minutes and seconds of time. The table is correctly reproduced here, and covers experiments on steel of 125,000 lb. tensile strength containing 0.45 per cent carbon and one on medium cast iron. The tests were all made with a Stellite tool except experiment 14, which was made with a high-speed steel having the same size and shape.

Experiment	Cutting Speed, Ft. per Min.	Depth of Cut, In.	Feed, In.	Duration of Cut	Material Worked On
7	98.5	1/16	1/18	6 min. 55 sec.	Cast Iron
8	66	1/8	1/18	12 min. 40 sec.	Steel
10	66	1/8	1/18	13 min.	Steel
11	164	1/128	1/72	15 min.	Steel
13	98.5	1/128	1/72	4 min. 45 sec.	Steel
14	98.5	1/128	1/72	70 min.	Steel

U. S. DEPARTMENT OF LABOR - U. S. EMPLOYMENT SERVICE		WATERBURY CHAPTER AMERICAN RED CROSS	
<b>REGISTRATION BLANK</b>			
<b>FOR RETURNED SOLDIERS AND SAILORS</b>			
Name _____	Address _____		
Rank _____			
Discharged _____	From _____		
Wounded _____			
Gassed _____			
Bleed / Shocked _____			
Physically fit _____			
Parents living _____			
Do you live at home? _____			
What was your occupation before entering service? _____			
By whom were you employed? _____			
Were you drafted or did you enlist? _____			
What are your future plans? _____			
_____			
Have you applied for your old position back? _____			
If so, with what results? _____			
When will you start work? _____			
<sup>a</sup> Do you need financial assistance before first pay day? _____			
REFERRED TO	OCCUPATION	DATE SENT	RESULT
Referring to Red Cross for _____			

# Training Operators at Winchester Plant\*

Short Intensive Course in Training Shop  
for Men—Three Years' Apprenticeship in  
School for Boys—Details of the System

BY W. E. FREELAND

**A**N INNOVATION in the tool department of the Winchester Repeating Arms Co. at New Haven, Conn., is the training shop, established to train operators for the simpler operations in the various tool shops and also to train men already in the organization for more skilled work and thus provide a means for maintaining and increasing the quota of skilled workmen. The instruction provided is highly intensive and therefore the number of pupils is kept down to a limit which enables the teaching staff to give individual attention. Each instructor rarely has more than five men under his immediate charge. The course is designed to extend not over two months and many operators are graduated into the shops in much less time.

The employment department selects men from 20 to 40 years of age who are not subject to immediate call in the draft. The applicants are sent to the foreman of the training shop, who subjects them to a literacy and such other tests as he may deem advisable and advises the employment office that the man has been accepted and the rate of pay. As the class of operators required varies as the requirements of the different shops vary, the production supervisor of the tool department notifies the foreman of the training shop who in turn advises the employment office of the type of men required and devises the training necessary to meet the requirements of the particular operations to which the men are to be assigned.

This shop is not considered on a production basis, but when it is possible regular production work or emergency work is assigned to help make it self-sustaining. It is expected that as the work develops and experience is gained, the shop will be employed more and more on productive work. As each instructor has not more than five men under his charge, the undertaking will probably fall short of being self-sustaining,

but the gain that is made in the productive shops in relieving them of the task of breaking in untrained operators offsets any loss that may occur in their training. It is expected that the training shop will be able to replace semi-skilled men now working as operators, and these older operators will be used to replenish and augment the more skilled force engaged in assembling and in other high-grade work.

## How Apprentices Are Trained

The apprentice shop of the tool department has been in successful operation for some years. The shop has a capacity for 90 boys and from 40 to 70 of those more experienced are usually at work in other departments gaining experience. The school is a true apprentice school, giving the boys an all-round training and furnishing them a diploma at the end of the three-years' course.

Applicants are carefully investigated and are expected to pass an examination in arithmetic with a mark of at least 80 per cent. He then serves a two months' trial period. Each apprentice is furnished with a set of tools worth about \$100, paid for out of his wages or out of the bonus of \$100 given at the completion of the course if he agrees to remain as a journeyman with the company for one year. Previous to the war about 80 per cent of the boys completed the course and remained with

the company, but the experience of the last two years has been that of virtually all apprentice schools, and the percentage of loss due to the high wages offered semi-skilled men has considerably reduced the percentage of those completing the course.

The apprentices are graded into four classes, and there are four grades within each class. Two or three hours each week are passed in the classrooms, and the remainder of the time in the shop. They are supplied at the beginning of their work with two mechanical handbooks and one textbook on shop mathematics, paid for out of their



Typical Group of Winchester Apprentices. These boys work in a special apprentice shop on productive work and toward the latter part of their training spend part of their time in the production shops

\*Eleventh article of a series dealing with the Winchester Repeating Arms Co.'s plant. This is the third article devoted to the Tool Department.

wages. They are also expected to subscribe to at least one mechanical magazine. The company maintains an unusually good technical library for the benefit of employees, and the boys are urged to make the utmost use of it.

In the shops the boys are divided into groups of 15, with an instructor over each group. One of the boys of each group is appointed monitor and has the care of the machines, assigned by the instructor. The work to be done by each boy is assigned by the planning overseer of the shop. All the work is production work and the loss or scrap is less than 5 per cent. Each boy carries through all the work on a single piece, each section under the charge of the instructor, having a complete machine equipment to make this possible. Boys showing special aptitude and promise are offered an opportunity to take a post-graduate course of two years, designed to develop them into executive material.

The apprentice is assigned a section of work-bench provided with vise, drawer, toolchest, waste box, etc. The record of the work he does is filled out by the boy and the instructor together. A

record is kept of each boy's progress, and upon this record is based the rate of pay given him at the completion of his course. He is urged to enter the educational courses conducted by the personnel department of the company and such other courses conducted by the Y. M. C. A. and the city evening schools as may enable him to make up his deficiencies in education or to advance beyond the point reached by the classwork of the school.

The apprenticeship term consists of three years of 2750 working hours each. The rate of pay for the first six months is 18 cents an hour and for each succeeding six months' period, 20, 22, 24, 26 and 28 cents respectively. These rates may be increased if the apprentice's performance and department warrants it. During the latter part of their course, the boys are usually employed for two or three months in each of the production departments and are enabled to determine what sort of work they desire to take up when they have received their diplomas. Frequently the boys have attracted the favorable attention of some department head, and requests for particular boys are made before they have completed their course.

[illegible]

These Apprentice School Forms Furnish a Record of the Boy's Progress. Upon this record is based the rate of pay given him at the completion of his course



# New Coke-Fired German Gas Producer

Makes a Gas Low in Moisture and Sulphur — Pig Iron High in Manganese and Phosphorus a By-Product

EVER since the beginning of the war the Germans have devoted much energy to the use of coke as fuel in order to use coal in by-product ovens and thereby increase the output of coal tar, ammonium salts, benzol, etc., to the maximum. For this reason we find many references in such technical journals as have been available to the various ways in which coke can be used. A most interesting article of this kind appeared in *Stahl und Eisen*, March 7, 1918, describing careful tests carried out on a gas producer using coke exclusively, which had been in operation for two years. The gas produced is known as dry-gas because it is comparatively free from water vapor.

This producer is arranged with tapping holes because the ash of the coke is changed into slag by means of charges of mixer slag, basic open-hearth slag, or mixtures of the two. The iron of these, or other slags rich in iron, is reduced and obtained as a pig iron high in manganese and phosphorus. The producer differs from the other tapping-producers, because no steam is used, nor is there any heating of the hearth. It can be considered as a small or half blast furnace, in which, however, all the carbon monoxide produced passes off through the gas main, and can be used as fuel around a steel plant or for other purposes.

The reduction of the iron in the slags that are charged is not brought about by carbon monoxide, as is shown by the very small amount of CO<sub>2</sub> in the gas, 0.30 to 0.70 per cent. The separation of the metal from the silicate slags by means of solid carbon takes place so remarkably soon that it constitutes one of the chief reasons for using such slags in preference to others. The use of slags high in phosphorus insures a free-running metal, also high in phosphorus, which will not readily freeze because of its low melting point.

A short description of the producer, which is shown in the illustration, follows. It has the general design of a blast furnace, with a vertical shaft and narrowed hearth. Its height is 5 meters (16 ft. 5 in.). The hearth diameter varies from 1.1 to 3 meters (3 ft. 7 in. to 9 ft. 10 in.), depending upon the 24-hr. capacity of 10 to 100 tons. The producer used for the tests had a capacity of 30 tons in 24 hr. and a hearth diameter of 1.6 meters (5 ft. 3 in.). The charging arrangement is the usual hopper and cone. The blast, heated to 55 to 70 deg. C., has a pressure of 9.1 oz. per sq. in. It is distributed from the bustle pipe to six water-

cooled tuyers. The hearth is drained by a tap hole for the metal, and 7½ in. above this to one side is the slag taphole. The producer has a roof of fire

Table of Gas Analyses Taken Every Two Hours

Carbon dioxide, CO <sub>2</sub> .....	0.30 to 0.70 per cent
Carbon monoxide, CO .....	33 to 33.50 per cent
Methane, CH <sub>4</sub> .....	1.20 to 1.30 per cent
Hydrogen .....	0.10 per cent
Sulphur .....	0.122 grains per cu. ft.
Moisture .....	5.24 grains per cu. ft.
Dust .....	0.73 grains per cu. ft.
Specific weight .....	0.91 to 0.94
Heat value .....	127 B.t.u.

brick, in which are six 1½-in. observation or piking holes.

During the 14 days of the test the slag was tapped every four hours, the metal every eight hours when charging mixer slag, and every 12 hours when

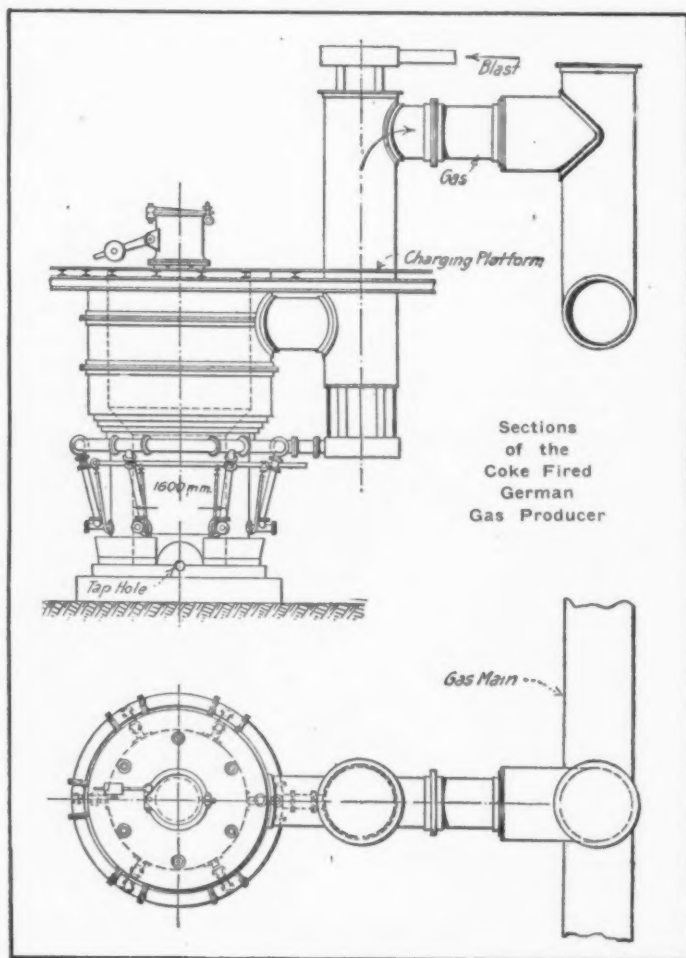
charging open-hearth slag. These times have been found to be the best after exhaustive tests carried out at the Georgsmarienhütte during the two years that the producer has been in use. There was no stoppage of any kind during the 14-day test. The average temperature of the gas was 700 deg. C., and its pressure 1.14 to 1.06 oz. per sq. in. The plant has found that the producer has a life of about 13 months, when a new hearth lining is needed. The rest of the producer needs little repairing.

The samples of gas taken every two hours the average results shown in the table.

The gas is distinguished by very high CO contents and very low CO<sub>2</sub> and moisture. This low amount of water is the reason for the name dry gas. In order to judge the value of a gas the best test is the heating effect produced when it is burned. Careful experiments under

standard conditions have shown that this is 85 deg. C. higher than with ordinary coal producer gas. This is intimately bound up with the amount of air required for combustion, the amount of moisture in the gas and the waste products produced.

The moisture present in gas made from coke in revolving grate or in Morgan producers using steam is an average of 18 grains per cu. ft., more than 3.3 times that found in dry-gas. The latter is practically free from tar, there is no loss in carbon through the formation of tar, and all the carbon in the coke is gasified and can be used. With an average carbon in the coke at Georgsmarienhütte of 86 to 88 per cent, each kilogram of coke gives 4.8 to 5 cu. m. of gas, while in general 1 kilogram of coal gives 4.4 cu. m. of gas in ordinary producer practice. The use of



better coke should allow an output of 5.2 to 5.3 cu. m. to be easily reached (83.3 to 84.9 cu. ft. per lb.).

As to sulphur in the gas careful tests have shown the following results:

Coke-oven gas .....	0.32 to 0.82 grains per cu. ft.
Blast-furnace gas .....	0.044 grains per cu. ft.
Ordinary producer gas .....	0.34 to 0.44 grains per cu. ft.
Dry gas .....	0.12 to 0.126 grains per cu. ft.

As already mentioned, almost all the iron in the ash of the coke and the slag charge is obtained in the form of pig iron. The amount varied according to the weight and kind of slag charged from 0.5 to 1.3 tons each 24 hr., that is from 36 to 94 lb. per ton of coke. This metal was cast in plates and showed a fracture like spiegeleisen. Analyses of this metal and of the slag from the producer are shown in the table:

Table of Analyses of Tapping Slag and Producer Iron					
Tapping Slag				Producer Iron	
Silica, Per Cent	Lime, Per Cent	Manganese, Per Cent	Iron, Per Cent	Manga- nese, Per Cent	Phosphorus, Per Cent
38.80	32.20	3.92	2.42	8.88	9.92
35.00	32.60	3.02	1.69	....	....
33.80	30.00	7.04	1.81	7.44	7.55
33.20	29.40	7.04	1.20	....	....
33.00	29.20	6.96	1.81	8.64	8.39
31.60	23.40	6.96	1.81	....	....
32.40	26.20	8.08	1.50	7.76	11.18
33.80	31.60	6.48	1.61	8.88	10.90
33.00	25.60	6.56	1.40	8.80	11.46
31.80	31.80	7.20	1.41	8.72	11.18
32.60	35.00	6.84	1.41	8.48	9.36
30.40	35.20	5.76	1.04	8.00	9.78
33.20	32.60	6.24	1.21	8.96	9.92
34.40	27.20	5.44	1.51	9.60	10.20
35.00	27.40	6.64	1.63	10.32	11.18
31.40	29.40	5.36	1.39	9.76	10.62
32.40	30.00	5.84	1.48	8.88	9.78
32.40	31.20	4.32	1.46	10.32	10.02
33.40	30.40	3.58	1.48	10.24	9.22
29.20	38.60	2.56	1.28	9.68	8.52
25.00	25.00	2.48	2.47	10.24	6.85
29.80	31.20	2.72	1.64	10.48	9.36
31.80	31.60	2.00	1.57	10.40	8.80
31.20	31.40	2.96	1.69	10.08	7.13
32.00	23.80	2.16	2.42	9.52	6.99
32.00	36.00	2.24	1.45	9.60	6.84
30.20	33.20	2.00	1.45	8.80	6.99

Analyses of the mixer slag used show it to vary from 22.60 to 27.30 per cent in silica, 0.87 to 3.02 per cent in alumina, 30.15 to 34.20 per cent in lime, 4.47 to 8.86 per cent in magnesia, 4.66 to 5.13 per cent in P<sub>2</sub>O<sub>5</sub>, 10.06 to 13.39 per cent in iron, and 7.22 to 11.20 per cent in manganese. The basic open-hearth slag varies from 11.80 to 15.70 per cent in silica, 3.42 to 7.37 per cent in alumina, 35.18 to 41.80 per cent in lime, 6.35 to 8.87 per cent in magnesia, 1.53 to 3.90 per cent in P<sub>2</sub>O<sub>5</sub>, 12.95 to 15.75 per cent in iron, and 3.92 to 5.60 per cent in manganese. When this open-hearth slag is used alone the iron produced is naturally lower in phosphorus and manganese. The producer slag was always liquid and flowed smoothly from the producer. The color was generally a yellowish green and the structure stony, seldom glassy. The fear that the basic open-hearth slag would not give a free running producer slag was not justified.

G. B. W.

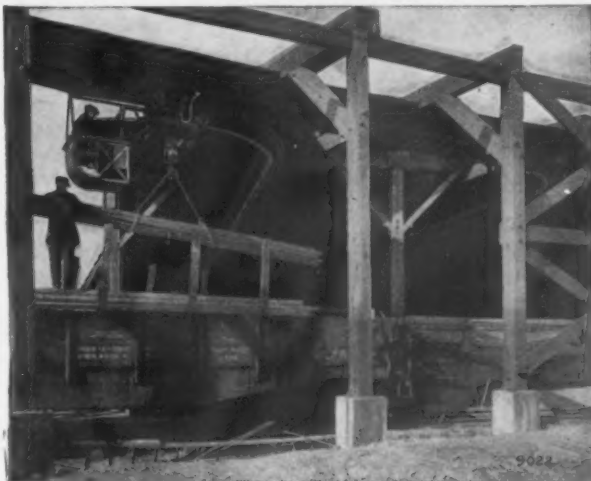
Cleveland Companies Consolidated

The North American Mfg. Co., Cleveland, has bought the Electric Motors Co. and the Naab Mfg. Co., that city. The new company has an authorized capital of \$125,000 and assumes the liabilities of the two companies absorbed. The officers of the North American Mfg. Co. are much the same as the Electric Motors Co., being: Geo. Reuben Brown, president and treasurer; Chas. J. Forbes, vice-president; Geo. F. Naab, vice-president; Welles K. Stanley, secretary and counsel; Jas. A. Brady, general manager of sales; Z. D. Basset, purchasing agent. The company manufactures electric blow torches, oil burners, blowers, hardening furnaces and electric motors.

The Electrolytic Co. of Australia, operating in Tasmania, has the first unit of its plant running continuously. Over 90 tons of high-grade zinc is being produced weekly. Plans for a larger scheme, embracing the treatment of approximately 250 tons of zinc concentrate per day, to yield 100 tons of electrolytic metal, are now under consideration.

Link-Belt Electric Hoists Increase Production

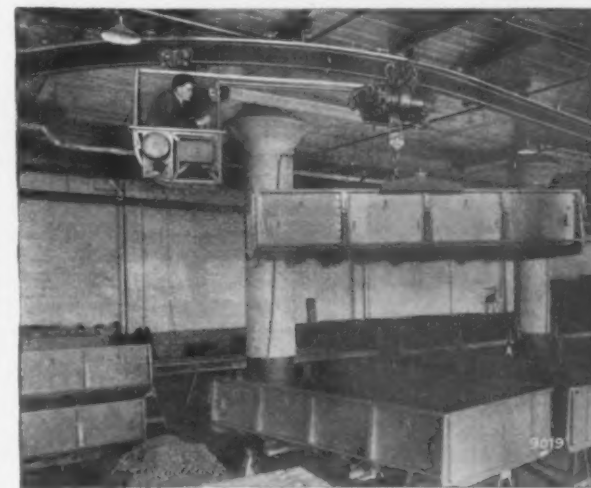
An efficient method of shortening loading and material handling operations, and also reducing their cost, is the application of the Link-Belt electric hoist. One illustration shows one of these machines unloading pipe from a gondola. This class of material, and plates and shapes as well, may thus be handled. Hoists simplify the handling problems throughout a plant in countless ways. An overhead cage hoist is handling truck bodies at an important government plant and



Link-Belt Electric Hoist as a Time Saver in Unloading Pipe From a Car

hoists are also assisting in speeding up ship production, and in the work of the navy yards.

For loading gondola cars the load may be brought directly over the car, and then lowered. A manufacturer of government truck bodies has seen in the monorail hoist system a method here illustrated. The operator has just lifted a body from the storage pile, and



Monorail Hoist System in a Truck Body Plant. The monorail is in the form of the letter U and carries the truck bodies from the storage pile out over the car

is ready to carry it out over the car. The track system is in the shape of the letter U. The curved part covers the storage area, while the two straight sections run over two parallel sidings.

It is expected that in the near future artificial gas for heating purposes will be substituted largely for natural gas in the Pittsburgh and other districts, where a considerable shortage in supply of natural gas has developed. This was the prediction made at a conference held last week under the auspices of the Public Service Commission in Pittsburgh. The Philadelphia Co., which has been a large supplier of natural gas for many years, it is stated is now prepared to supply 7,000,000 cu. ft. of artificial gas per day, and expects in the near future to be able to supply 30,000,000 cu. ft. of artificial gas per day.



## DEALING WITH LABOR PROBLEM

### Plans for Handling Industrial Relations Presented at Meeting of Mechanical Engineers

What general principles shall be followed in dealing with labor problems? An answer to this live question was recently offered by H. P. Kendall and E. D. Howard at the annual meeting of the American Society of Mechanical Engineers. The following digest of the joint paper presents the leading elements of the authors' proposals for handling wage matters:

It is a serious question whether it is possible to escape the task of regulating industrial relations. There are even now establishments and entire industries where standardization is already imposed upon the employer, not by a board in which his interests are protected by arbitration, but by labor unions. A general principle which determines standards under these conditions is not to the best interest of the industry, and does not even take into consideration justice either to employers or members of the union, but only the preservation of the existence and power of the union.

So long as the union must fight for its existence and is subject to attack, it must adopt this principle just as government's first duty is self-preservation. If unionism is to increase with more or less Government approval, it may be assumed that in the future the employer will not have a chance between free compensation and adjustment boards in fixing relations but will have to submit to arbitrary standards fixed by the union. With the union in power, it will be very difficult, indeed, to bring them to agree to standardization of these relations on general principles of justice and reason.

The regulation of industrial standards by joint boards has the great advantage over the present system in that it eliminates at least three-fourths of the cost of friction and strife between the particular employer and his employees. Each employer then adopts the standards current in his trade and knows that all his competitors are on the same basis and have no advantage over him.

#### Public Interest in Wage Moderation

Even under our present system, the chief objection to any one employer's increasing wages lies in the fact that it comes out of the profits unless the increase is general among his competitors, when it is shifted to the consumer of the product. It is easy to foresee a time when the public and not the employers will have the chief interest in opposing wage advances.

In many, if not most, of the cases where employment conditions are admittedly unsatisfactory, the employers are helpless to improve them on account of the pressure of competition. The plan for organizing adjustment boards provides a remedy for this by attempting to establish standards for itself which are protected against demoralization by competition.

The tendencies for industries to become more and more dependent upon each other is increasing and the consequence of this is an increasing necessity for industrial peace. The indirect effects of stoppages increase with the greater integration of industry, and the number of interests and people who suffer from labor difficulty and yet have no direct participation in them grows each year. A street-railway strike, for example, in a great city causes a collateral loss of business all out of proportion to the amount in dispute between the company and its employees. The indirect interests affected by labor disputes are therefore becoming so important as to be entitled to more consideration than they have had in the past.

Standardization is increasing in the larger industrial establishments. The introduction of employment and labor departments with functionalized executives and more or less application of the principles of scientific management has tended to eliminate the older methods of individual bargaining by a foreman or shop executives. The administration of industrial relations, especially wages, by a skilled person specialized for the work is no longer an experiment. There is a natural

tendency, wherever the employment manager has been introduced, to enlarge his functions until he becomes a part of the management where his experience and influence are utilized. No industrial administration is complete until in some part it is sensitive or responsive to the aspirations and grievances of the employee. The efficiency of production is often affected fundamentally by action taken in other departments of the business. Moreover, the labor manager has an opportunity to interpret a business policy to be established by the working force and may forestall opposition and ill-feeling by timely explanation of the reasons for such standards.

#### Compensation Measured by Output

There is a tendency where standards are fixed by haphazard methods, or in the heat of struggle with labor unions, for certain fundamentally right and efficient principles to be overlooked. That wherever there is a standardized wage there should also be a specified measure of proficient labor performed is not to be disputed by any reasonable person; yet situations are created where this just principle is opposed by labor organizations who feel compelled to take that position because of the circumstances of the situation. Another principle, equally self-evident, is that every worker has a moral right to compensation in direct proportion to his individual accomplishment, yet for reasons which seem to them to be valid, the unions frequently set themselves squarely against piece-work or bonus systems which aim to employ this principle. Under some system of standardization it is likely that these just principles may be reestablished with proper safeguards against abuse.

The war period has created a very perceptible change in attitude on the part of employers toward what is loosely termed "collective bargaining." This does not mean that the management of industry should be turned over to labor unions, nor does it even mean that employers shall have dealings with the officials of labor unions. It does mean, however, that employers recognize the need for a greater sense of responsibility on the part of the employees toward the efficiency and success of the business in which they are engaged, and that to develop this sense greater participation in those matters which vitally concern them shall be granted to the workers. Moreover, the worker should be given an opportunity to learn more about the policies and the difficulties of management. The indifference and even a hostility of the workers to efficiency arises from their relationship to the business and the absence of reasons why they should be interested.

#### Collective-Bargaining and Co-operation

The Federal Labor Administration, following the President's proclamation by which the War Labor Board was created and manifested in the collective-bargaining clauses of the Quartermaster's and Ordnance contracts, gave an impetus to the general principle of participation in management which many have begun to see offers an opportunity for a general betterment of industrial relations in individual plants. The introduction of a system of organized representation of employees by the Standard Oil interests and the apparent success of the idea has stimulated general interest, and it now appears that this idea is likely to be much more generally accepted, especially by large industrial plants.

The misgivings with which many industrial employers contemplate the introduction of this principle is due to their fear that it may introduce unionism in some of its evil forms into their establishments, and if this were true they would be justified. It seems clear, however, that the worst features of unionism are due to the circumstances in which these organizations must be developed; the vigorous opposition of employers to organization among the workers creates in them a spirit of antagonism, and this naturally creates a type of organization which, because of the hostility engendered by the warfare with employers, must fight for its life, and in so doing, must create a spirit of disloyalty to the employer. We have seen in the great war that efficiency in fighting depends upon the passionate feeling which can be developed in fighters against the



enemy. This accounts for the unreasonable and violent practices and policies of the labor unions.

It is reasonable to expect that organization of employees fostered by the employer and given full opportunity to function legitimately in matters which touch the interest of employees may develop into constructive agencies whose criticisms and suggestions may be of great value in improving the efficiency of the business. In fact, there has been enough experience in several American industries to show that this is a natural development of employees' representation. That responsibility creates conservatism is a truth, demonstrated nowhere more convincingly than in industrial relations. Give employees responsibility and opportunity to exercise it and sooner or later there must develop leadership among them which will contribute not a little to the vitality and general efficiency of the establishment.

#### Some Essentials in Profit-Sharing

To make this plan truly successful, however, the management must decide to give labor a fair share of the results of the efficiencies and economies realized. Too often by the introduction of new methods and labor-saving machinery the employer cannot bring himself to yield a share of the benefits to the employees, although he expects them to bear uncomplainingly any hardships of the transition. The difficulties of systematically giving the workers their share of the profits are perplexing. In fact, the subject of profit sharing is very attractive to any student of industrial relations, but the difficulties have frightened many away. The general principle that every man should have the opportunity to reap the reward of his own efficient efforts, whether applied individually or collectively with others, is admitted by all. Experience with profit sharing has revealed certain truths: The more immediate the relation between reward and special efficiency, the more likely it is to be successful. The greater the benefit realized by the worker or his family through the reward of special effort, the more effective it is as an inducement. Bonuses or other rewards spent by the worker in a wasteful manner and without a proportionate improvement in his general well-being are not so highly appreciated as those representing some permanent benefit, such as insurance for his family against sickness or death, permanent improvement in his living conditions, especially housing, or investments which increase his feeling of security and give him an incentive to thrift. Any system of profit sharing, therefore, should take into full account the permanent needs of the worker and attempt to satisfy them to a maximum.

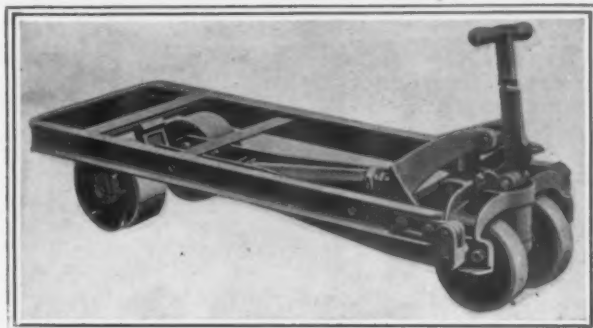
The absence of any recognized principle for the distribution of the profits of a business as between the proprietor and the worker is a great problem, especially where there is an amicable system of industrial relations in vogue. It is difficult to know what is the right and just method to use, but the difficulty will be largely overcome in the individual establishment by the suggested plan of standardization of industrial relations. If this perplexing matter of distribution could be eliminated from the relationship between employer and employees in particular establishments, then the introduction of the ideas of employment—labor management, representation of employees, responsible leadership among the employees and the comprehensive service department helping the employees to collectively improve their living conditions—might result in a relationship so applicable and profitable to both employer and employee that we might anticipate (if not have the solution of the labor problem) at least so great an improvement over the old conditions as to constitute an industrial revolution in the best sense of the word.

Four 10,000-ton steamers are being built by the Kiangnan Dock & Engineering Works, Shanghai, for the United States Government. All the construction work, the engines and boilers, will be built in China. The United States, however, will supply the steel materials, machines for a new boiler shop, and tools for the machine shop. The plant is being converted from a steam to an electrically run industry; hand riveting will be supplanted by pneumatic hammers.

### A Heavy-Duty Lift-Truck

Lift-trucks in two new models are now being offered by Barrett-Cravens Co., 711 Transportation Building, Chicago. In the lifting mechanism the handle connects directly into the upper frame, there being no connecting links. The handle automatically disengages from the upper frame when the load is raised and remains upright if desired when the truck is not in use, or drops to 15 in. from the floor. The automatic safety lock, which holds the load in the raised position, is built of cold drawn, case-hardened steel; and the manufacturer claims that the heavier the load the stronger it will grip; the more it wears, the more secure it becomes.

The new models, referred to as H and Y, are for loads of 5000 lb. Model H is 20 in. wide and is particularly designed for heavy narrow loads in congested quarters. The Y model is 27 in. in width and is in-



Unusually Large Shapes are Used in the Framework of This Heavy-Duty Industrial Lift Truck Designed for Congested Quarters

tended for bulkier loads. Both types are built in 42-in., 48-in. and 60-in. lengths or longer on special quotation, and their heights when lowered are 7, 9 or 10 in., or higher on special quotation.

Unusually heavy angles and channels are employed in the construction of the framework, which, together with simplicity of construction, unite to give what is claimed to be a maximum of strength and durability.

### Bituminous Coal and Coke in 1918

The estimated production of 585,883,000 net tons of bituminous coal and lignite in the United States in 1918 sets a new high record, with an increase of 34,000,000 tons, or 6.2 per cent over 1917. Production in 1918 was more than sufficient to meet the needs of the country. By Nov. 11 the average stocks over the United States were sufficient for seven weeks and the cessation of war activities and warm weather in November and December have made it seem advisable to many consumers to begin using storage coal earlier than is usual.

Although the bituminous coal mines lost to the military service and to other lines of industry in 1917 and 1918 more than 125,000 men, the loss has been largely made up, in numbers if not in effectiveness, by addition to the forces, and it is not believed that for the country as a whole the number of men employed in 1918 will show any noticeable decrease below the 603,000 in 1917. It is estimated that the bituminous mines worked on an average 255 days in 1918, compared with 243 in 1917, and 230 in 1916.

The production of coke in 1918, according to the United States Geological Survey, is estimated at 56,670,000 net tons, compared with 55,606,828 tons in 1917, an increase of 1,603,000 tons, or 3 per cent. By-product coke production is estimated at 26,264,000 tons, an increase of 3,825,000 tons, or 17 per cent, compared with 1917. Beehive coke is estimated to have decreased 2,762,000 tons, or 8 per cent, from 33,167,548 tons in 1917, to 30,406,000 tons in 1918.

The George W. Moore Co. is the new corporate style of the Moore & Lorenz Co., manufacturer of elevating and conveying machinery, 2144 Fulton Street, Chicago, P. A. Lorenz having retired from the business.

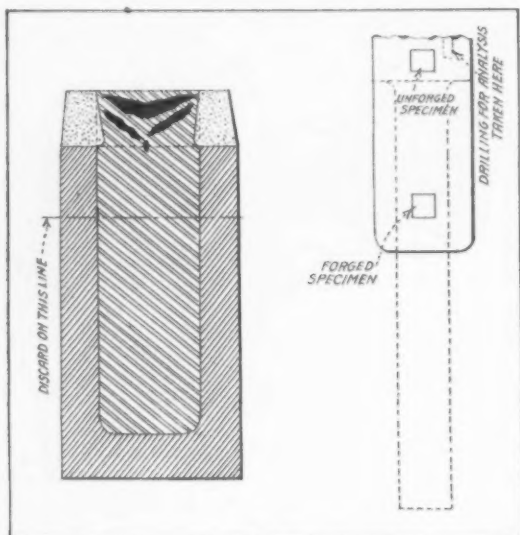
## SPECIFIC DENSITY OF STEEL\*

### The Extent to Which Forging Compresses or Consolidates the Metal

BY H. E. DOERR

THE writer has been unable to find much information relative to tests made to determine the effect of forging on the specific density of steel. The opinion, however, among men engaged in the business, seems to be that forging greatly compresses or consolidates the steel. While such is doubtless the case with spongy or porous steel, the following experiments indicate that there can be little or no change in the density with steel initially free from cavities.

Ten ingots of basic open-hearth steel, cast as shown in the illustration, were used in the experiments. All



The Basic Open-Hearth Steel Ingot and the Shape Into Which It Was Forged

the specimens were 0.53 per cent carbon with all other elements the same, the analysis being determined from drillings taken midway between the center and outside of the upper end, as shown in the right hand diagram. The specimens were selected from over 1000 ingots so that the tests could be comparative for the work done in forging only, but no two of the ingots were cast in the same heat. Each ingot remained in the mold approximately 30 min. when it was removed and air-cooled. About 12 hr. later, when the temperature had been reduced to approximately that of the surrounding atmosphere, the head was discarded and the ingot heated in an oil furnace to approximately 2250 deg. Fahr. (1235 deg. C.). Approximately 1 min. was required to forge under the steam hammer to 1½ in. (31.75 mm.), rough diameter, as shown by the dotted lines. All ingots were allowed to air-cool after forging. Cylinders ½ in. (12.7 mm.) in diameter and ½ in. high were then turned from the forged and unforged parts of the ingots and numbered.

The 10 pairs of specimens were submitted to Louis E. Endsley, professor of railway mechanical engineering, University of Pittsburgh; A. N. Talbot, professor of applied mechanics, University of Illinois; L. Z. Slater, chief chemist, Scullin Steel Co., St. Louis. No information was furnished as to which specimens were forged or unforged and each laboratory used the same specimens, submitting the average of three independent determinations, a tabulation of which is shown in the accompanying table in which the laboratories are designated by A, B, and C.

While there is considerable difference in the individual determinations for a number of the specimens, the averages for both the forged and unforged specimens are very close. The determinations of each laboratory

indicate that the forged is the denser of each pair with the single exception of B's determinations for No. 10. Assuming that all cavities, however small, were completely closed, the average results indicate that only 0.64 per cent of the sectional area of the original ingot consisted of cavities.

The ratio of volume to superficial area is so great with an ingot of the size used that it is doubtful whether

Table of the Effect of Forging on Specific Density of Steel  
Density Determined by Laboratory

Specimen	A	B	C	Average
No. 1 forged	7.807	7.86	7.826	7.831
No. 1 unforged	7.732	7.81	7.815	7.786
No. 2 forged	7.825	7.85	7.824	7.833
No. 2 unforged	7.756	7.79	7.792	7.779
No. 3 forged	7.810	7.85	7.818	7.826
No. 3 unforged	7.779	7.79	7.781	7.783
No. 4 forged	7.837	7.84	7.875	7.851
No. 4 unforged	7.774	7.80	7.790	7.788
No. 5 forged	7.828	7.86	7.829	7.839
No. 5 unforged	7.802	7.83	7.800	7.811
No. 6 forged	7.830	7.85	7.846	7.842
No. 6 unforged	7.761	7.76	7.814	7.778
No. 7 forged	7.808	7.84	7.840	7.829
No. 7 unforged	7.694	7.77	7.791	7.752
No. 8 forged	7.828	7.85	7.863	7.847
No. 8 unforged	7.759	7.79	7.809	7.786
No. 9 forged	7.818	7.84	7.854	7.837
No. 9 unforged	7.755	7.78	7.798	7.778
No. 10 forged	7.820	7.85	7.873	7.848
No. 10 unforged	7.807	7.86	7.835	7.834
Average of forged	7.821	7.849	7.845	7.838
Average of unforged	7.762	7.798	7.803	7.788
Increased density of forged, per cent	0.760	0.650	0.540	0.640

the ingot can properly solidify without the formation of microscopic cavities. Undoubtedly with large ingots where the ratio of volume to superficial area is smaller than with the ingots used, the percentage of increase in specific density of the forged specimens would be reduced to a negligible value, if not wholly eliminated.

### Copper Output for 1918 Larger than for 1917

The production of copper in the United States in 1918 was slightly larger than in 1917, according to preliminary figures and estimates collected by B. S. Butler, of the U. S. Geological Survey, from all plants that make blister copper from domestic ores or that produce refined copper. The figures showing the smelter production from domestic ores represent the actual output of most of the companies for the first 11 months of the year and the estimated output for December. A few companies gave no figures for November but furnished estimates of the combined output of November and December. The production of blister and Lake copper from domestic ores was 1,910,000,000 lb. in 1918, against 1,886,000,000 lb. in 1917 and 1,224,000,000 lb. in 1913. The supply of refined copper (electrolytic, Lake, casting and pig) from primary sources, domestic and foreign, for 1918 is estimated at 2,450,000,000 lb., compared with 2,362,000,000 lb. for 1917 and 1,615,000,000 lb. for 1913.

According to the Bureau of Foreign and Domestic Commerce, the imports of copper in all forms for the first 11 months of 1918 amounted to 535,868,000 lb., against 556,000,000 lb. for the 12 months of 1917.

The exports of pigs, ingots, bars, plates, sheets, rods, wire and like copper products for the first 11 months of 1918, as determined by the same bureau, amounted to 692,759,000 lb.; the exports for the 12 months of 1917 were 1,126,082,000 lb.

At the beginning of 1918 about 114,000,000 lb. of refined copper were in stock in the United States. Adding this quantity to the refinery output of the year shows that the total available supply of refined copper was about 2,564,000,000 lb. Subtracting from this total the exports for the first 11 months and the estimated exports for the last month shows, on the assumption that there was no change in stocks, that the supply available for domestic consumption in 1918 was considerably more than the 1,316,000,000 lb. available in 1917.

The Crucible Steel Co. of America, Harrison, N. J., has awarded miscellaneous contracts for the completion of its new one-story rolling mill now in course of erection on Fourth Street. The structure will be about 200 x 400 ft., and is estimated to cost \$375,000.

\*From a paper to be presented at the February meeting of the American Institute of Mining Engineers in New York. The author is chief mechanical engineer, Scullin Steel Co., St. Louis.



## A New Horizontal Boring, Drilling and Milling Machine

A new horizontal boring, drilling and milling machine brought out by the Blomquist-Eck Machine Co., Cleveland, has a deep wide bed without cored openings in the front or rear under the column where the greatest strains exist. The gear box is in a compartment at the end of the machine, cast integral with the bed. The column is wide with tapered sides, the operating levers are above the bed in convenient reach, a power rapid traverse is provided, the gear and feed mechanisms are on ball bearings and the machine has an unusually long spindle travel.

The bed is of the box pattern cast in one piece. Chip chutes also give the walls added strength. The bed directly under the column is reinforced by sections cast integral and by heavy deep ribs running lengthwise. At right angles the 3-point support or bearing is incorporated in the construction. The column is a rigid box section strongly ribbed internally, and having a liberal bearing on the bed.

The spindle saddle has a liberal bearing on the column and has a long guiding edge with a taper gib for adjustments on one side and a square gib on the other. The center of the spindle in the saddle is close to the column face, reducing overhang to a minimum without sacrificing strength. The elevating screw, between the column and the spindle, is so placed that the vertical movement of the saddle is direct and accurate. The units comprising the spindle and saddle are counterbalanced by a weight within the column.

The spindle,  $3\frac{1}{2}$  in. in diameter, of high carbon steel ground its entire length, is fitted with a No. 5 Morse taper and has end thrust for operating in either direction. The spindle sleeve is a hammered steel forging ground inside and out. The front and rear spindle sleeve bearings are bronze, adjustable and tapered. Either bearing adjusts for wear. Sight feed oil cups are provided.

The spindle has a travel of 30 in. and there are 12 spindle speeds with a range of 16 to 196 r.p.m. There are 9 feed changes to the spindle or table and, with back gears, 18 feed changes. The ranges of feed in inches per each revolution of the spindle are 0.003 to 0.518 in.

The boring bar support is raised or lowered with spindle saddle by a shaft and a set of planed steel bevel gears. The bar support or boring proper is clamped by a lever bolt.

The drive and feeds are direct geared. Power is transmitted to the spindle through close coupled driving gear shafts mounted on S.K.F. ball bearings. All shafts are of high carbon steel. Hardened steel ring spur gears are used wherever possible and these are shrunk onto cast iron hubs. The smaller spur gears in the drive are of solid steel and heat treated. The bevel gears are of hammered steel forgings. Speed changes are made by two levers at the front of the machine operating selective sliding gears. Each shaft and bearing can be removed without disturbing an adjoining unit. Access to the entire unit can be had through an oil-tight cover. The feed to the spindle in either direction, to the spindle saddle in raising or lowering upon the column, to the table saddle paralleling the bed, or to the table longitudinally upon its saddle is in the same direct manner as to the spindle drive. All driving and feed gears run in oil baths and in addition a positive cascade oiling system is provided for gears and bearings.

Feed changes are by two levers directly in front and at the top of the gear box. There are also three selective interlocking levers for either spindle, vertical or table feeds. If the spindle feed is operated, the table and vertical feeds automatically lock, or vice versa. In operating star feed facing heads or similar work nature, all feed levers can be locked neutral.

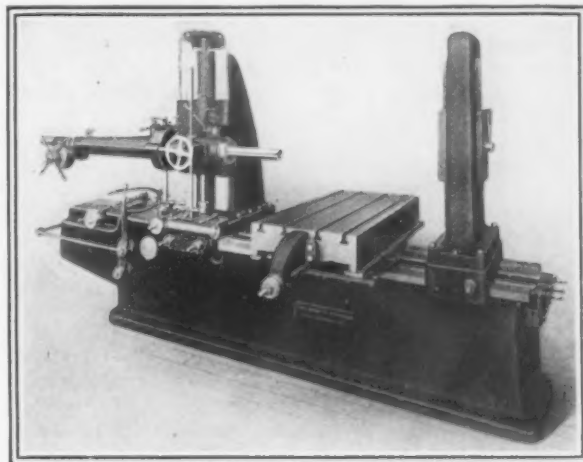
When the table is in either extreme position it is supported in the saddle for practically three-fourths of its length. The saddle is gibbed to the bed, as is the table to the saddle, by square lock methods.

The table is extra heavy with a working surface

24 x 54 in. It is reinforced by heavy ribs. The T slots are planed from the solid. The automatic longitudinal feed to the table is 36 in., the automatic traverse feed or parallel movement of the table with bed 37 in., the maximum distance from the spindle nose to the out-board bearing 5 ft. 5 in., the maximum distance from the top of plain working table to the center of the spindle 27 in., and the maximum distance from the top of the bed to top of the table is 10 in.

A rapid power traverse of a friction type is provided for all members operated by the feed, and regardless of whatever feed may be engaged the rapid traverse always operates at one rate of speed in either direction. It is instantly engaged or disengaged without disturbing the original feed setting. An adjustable safety friction leather washer in the clutch mechanism prevents damage to any portion of the mechanism. The clutch control is sensitive.

In addition to the automatic feeds, hand adjustments are provided for the spindle and table travel. All screws have graduated dials. A spindle friction clutch pulley drive operating at constant speed is regularly



Blomquist-Eck Machine Has Long Spindle Travel

furnished. However, constant speed or adjustable speed motor drive, and any type of electrical control, can be supplied. A 5-hp. motor is recommended and a constant speed of 900 to 1200 r.p.m. The machine weighs approximately 11,600 lb., crated for domestic shipment.

## The Fellows Gear Shaper Co.'s Annual Bonus

In accordance with a policy decided upon three years ago, the Fellows Gear Shaper Co., Springfield, Vt., this year paid a bonus to every man and woman who entered its employ before Dec. 1 and was still employed on Dec. 24—the date upon which the bonus was distributed. This bonus was based on the yearly earnings, including the regular 10 per cent bonus for full time and all overtime. The minimum rate was 2 per cent for the first and second years and 1 per cent for each succeeding year up to 10 per cent. For instance, those entering the employ of the company during 1918 received 2 per cent on their total yearly earnings, and those in the employ of the company for 10 years received 10 per cent.

For the year 1918 over 400 employees shared in the bonus, which amounted to a total of approximately \$14,500. Thirty per cent have been with the company more than three years, receiving the bonus since its inauguration, and slightly over  $5\frac{1}{2}$  per cent have been with the company 10 years or more. This is rather remarkable considering war conditions.

A further policy of this company is that in reference to employees who have entered the service of the country. These men upon their return will receive a bonus which will be based on their earnings for the time of previous employment. At the same time all employees who have entered Government service will not upon their return be considered as new employees, but will still retain their same rank as far as number of years of service is concerned.



# Value of Iron and Steel Exports Declines

Tonnages for Last November Almost Equal Those of November, 1917—Increased Shipment of Plates to Japan—Imports Show Further Decline

WASHINGTON, Jan. 14.—The cessation of hostilities Nov. 11 failed to restore our foreign commerce to anything resembling normal figures. Lack of shipping and the uncertainty of markets and embargoes kept the November exports and imports on a war basis.

The statistics of iron and steel exports for November, 1918, reveal a continuation of the drop from the figures of the preceding year. In November, 1918, they totaled \$89,551,487 against \$98,113,779 in November, 1917. For the 11 months ending with November, 1918, they totaled \$960,972,492 against \$1,122,758,261 in the corresponding months of 1917 and \$782,451,202 in the first 11 months of 1916.

The tonnage figures of iron and steel exports showed a considerable recovery, however, as against the low totals of October and almost equaled the figures of November of the preceding year. The exports of iron and steel in November, 1918, were 448,716 tons against 388,777 in October, 1918, and 473,929 tons in November, 1917. For the 11 months ending with November, 1918, the figures totaled 4,980,334 against 5,571,693 for the corresponding period of the previous year. The pig iron figures dropped from those of October, 1918, but the total of 30,825 tons is more than 5,000 tons in excess of the November, 1917, figures, which aggregated 25,743 tons.

The largest share of the pig iron exports went to the United Kingdom, 22,257 tons, Canada receiving 6,365 and Italy 1,907 tons. It is interesting to compare these items with the corresponding figures of November, 1917, when the United Kingdom received 5,691 tons of pig iron, Canada 7,723 and Italy 922.

The scrap exports, which had shown a slight recovery in October, 1918, almost vanished, with an export of but seven tons against 7,081 in November, 1917.

In the 11 months of 1917 the scrap iron exports totaled 149,423 tons. For the first 11 months of 1918, they dropped to 2,129 tons.

The exportation of steel rails dropped from 39,250 in November, 1917, to 34,590 tons in November, 1918. The October, 1918, figures showed an export of 49,495 tons. Of the November exports of steel rails, 10,111

## Imports of Iron and Steel

	November		Eleven Months	
	1917	1918	1917	1918
	Gross Tons	Gross Tons	Gross Tons	Gross Tons
Ferromanganese .....	1,512	520	42,422	26,991
Ferrosilicon .....	406	1,467	8,895	4,077
All other pig iron.....	1,495	2,880	20,326	1,973
Scrap .....	4,486	136	176,606	43,426
Bar iron .....	140	136	2,239	1,421
Structural iron and steel .....	793	798	5,239	3,492
Steel billets without alloys .....	3,091	3,453	34,122	31,240
All other steel billets..	972	751	7,649	6,998
Steel rails .....	767	68	7,835	6,830
Sheets and plates.....	122	103	1,233	1,486
Tin andterne plates..	886	492	124	32
Tin scrap .....	209	171	7,683	5,951
Wire rods .....			727	7,677
Total .....	14,879	10,839	315,280	151,257

## Imports of Manganese

	1917	1918	1917	1918
Manganese, oxide and ore of .....	44,141	38,580	599,423	469,879

went to France, 8,851 to Canada, 5,245 to Japan and 2,631 to Cuba.

The exports of steel plates continue to show an upward tendency, rising from 37,362 tons in November, 1917, to 56,846 in November, 1918. The October figures were 52,967 tons. Of the November exportations Japan led the list with 19,686 tons, followed by Canada with 16,806. The Japanese figures were practically identical

## Exports of Machinery

	November		Eleven Months	
	1917	1918	1917	1918
Adding machines .....	\$287,874	\$294,891	\$2,169,209	\$1,837,825
Air-compressing machinery .....	161,235	214,771	1,026,694	2,413,494
Brewers' machinery .....	46,077	36,686	149,206	128,312
Cash registers .....	73,149	133,187	767,628	673,397
Parts of .....	7,236	19,468	72,881	95,699
Concrete mixers .....	a11,671	7,998	a117,334	295,231
Cotton gins .....	5,922	15,428	80,393	100,677
Cream separators .....	6,523	63,436	532,539	711,403
Elevators and elevator machinery .....	178,344	390,797	2,049,961	1,999,895
Electric locomotives .....	17,185	42,255	381,182	140,890
Gas engines, stationary .....	56,787	12,020	785,508	439,915
Gasoline engines .....	2,489,890	1,718,200	22,617,823	32,557,341
Kerosene engines .....	a377,369	1,453,489	a1,418,634	7,542,271
Steam engines .....	3,648,135	923,333	31,651,373	27,314,556
All other engines .....	134,809	867,483	3,344,274	5,044,430
Parts of .....			b9,287,245	
Boilers .....	a223,536	450,404	a1,517,962	4,081,605
Boiler tubes .....	a586,372	846,539	a3,982,134	5,745,312
All other parts of engines .....	a1,122,912	1,638,026	a7,077,247	21,294,755
Excavating machinery .....	a139,481	15,847	a422,516	1,178,154
Milling machinery, flour and grist .....	38,338	152,622	716,969	1,236,867
Laundry machinery, power .....	37,466	18,049	404,566	375,012
All other .....	12,858	33,701	237,678	229,625
Lawn mowers .....	41,432	49,736	232,041	209,481
Metal-working machinery (including wood-working tools) .....			b44,604,259	
Lathes .....	a1,083,449	503,158	a8,423,459	9,161,076
Other machine tools .....	a914,841	1,949,802	a4,437,658	10,829,826
Sharpening and grinding machines .....	a514,408	351,292	a2,797,720	5,779,909
All other metal-working machinery .....	a2,287,774	1,884,808	a11,576,259	22,452,149
Meters, gas and water .....	51,844	42,831	1,159,608	375,602
Mining machinery, oil well .....	433,088	313,803	1,577,705	2,521,998
All other .....	1,043,900	552,231	9,702,919	8,169,190
Paper-mill machinery .....	83,173	174,359	1,724,503	1,466,052
Printing presses .....	84,424	249,924	1,460,953	1,315,003
Pumps and pumping machinery .....	679,321	552,738	5,779,523	5,519,064
Refrigerating and ice-making machinery .....	144,403	206,161	1,126,530	1,356,896
Road-making machinery .....	a109,313	33,506	a235,077	575,280
Sewing machines .....	819,639	982,977	7,391,677	7,318,234
Shoe machinery .....	90,595	124,176	1,476,636	1,181,259
Sugar-mill machinery .....	2,220,298	1,201,792	9,149,934	8,146,472
Textile machinery .....	431,465	775,772	3,510,547	6,560,911
Typesetting machines .....	123,909	148,435	1,175,392	1,200,312
Typewriting machines .....	733,242	819,417	8,720,322	6,535,775
Windmills .....	93,050	84,805	1,048,025	719,084
Wood-working machinery, saw mill .....	80,554	169,069	571,248	1,014,966
All other .....	80,878	153,617	971,372	957,741
All other machinery and parts of .....	3,349,855	3,897,519	37,755,071	38,609,412
Total .....	\$25,128,024	\$24,570,538	\$257,344,350	\$257,412,268

a Not separately enumerated prior to July 1, 1917.

b Six months ending June 30, 1917.

with those of a year ago, its November, 1917, imports being 19,812 tons, but the Canadian item is approximately six times as great as the November, 1917, total of 2,729 tons.

The export of steel sheets continues below the figures of last year with a showing of 8,862 in November, 1918, against 13,148 in November, 1917. Canada received 3,300 tons and Japan 2,632. Of the tin andterne plate exports of 17,828 tons in November, 1918, Canada obtained 7,431 tons against 1,387 tons a year ago and 4,686 tons went to the Argentine Republic.

The exportation of barbed wire slumped—as was to be expected with the end of the fighting—from 29,311 tons in October, 1918, to 23,190 in November, 1918.

#### Exports of Iron and Steel

	November		Eleven Months	
	1917 Gross Tons	1918 Gross Tons	1917 Gross Tons	1918 Gross Tons
Pig iron .....	.....	.....	377,094	3,566
Ferromanganese .....	6112	110	64,657	3,635
Ferrosilicon .....	61,491	389	66,075	237,749
All other pig iron .....	24,140	30,326	200,886	2,129
Scrap .....	7,081	7	149,423	53,260
Bar iron .....	5,029	7,460	49,413	137,773
Wire rods .....	19,062	13,027	161,190	540,147
Steel bars .....	30,346	37,080	547,895	1,722,399
Billets, ingots, blooms, n.e.s. ....	150,120	150,024	1,827,484	23,096
Bolts and nuts .....	2,854	2,878	210,511	46,981
Hoops and bands .....	4,200	4,921	51,533	2,668
Horseshoes .....	503	78	7,732	3,572
Cut nails .....	571	219	3,920	73,010
Wire nails .....	10,053	8,865	97,934	.....
Wood screws .....	6309	.....	61,382	.....
All other nails, includ- ing tacks .....	1,441	1,025	17,666	10,830
Cast pipes and fittings .....	11,051	1,886	70,583	54,258
Wrought pipes and fit- tings .....	10,687	8,152	118,996	81,985
Radiators and cast-iron house heating boilers .....	98	385	4,771	2,400
Railroad spikes .....	1,974	865	19,894	9,294
Steel rails .....	39,250	34,590	461,703	410,215
Galvanized sheets and plates .....	7,314	6,034	79,504	64,742
All other sheets and plates .....	4,342	1,554	53,411	38,898
Steel plates .....	37,362	56,846	485,567	488,974
Steel sheets .....	13,148	8,862	133,587	153,292
Ship and tank plates punched and shaped .....	62,260	2,972	612,081	28,613
Structural iron and steel .....	19,179	16,262	262,401	204,669
Tin andterne plates .....	21,276	17,828	164,650	207,807
Barb wire .....	27,977	23,190	177,497	231,039
All other wire .....	20,699	12,881	185,381	145,362
Total .....	473,929	448,716	5,571,693	4,980,334

a Not separately enumerated prior to July 1, 1917.  
b Six months ended June 30, 1917.

November, 1917, figures were 27,977 tons. Of the November, 1918, exports France received 13,335 tons and Italy 8,853. The other wire exports dropped to 12,881 tons, of which Japan received 3,106, France 2,309 and Canada 1,679 tons.

The machinery exports increased approximately \$2,000,000 over those of 1918 and dropped to about \$500,000 from those of November, 1917. In November, 1918, they aggregated \$24,570,538 against \$22,586,479 in October, 1918, and \$25,128,024 in November, 1917. This leaves the figures for the 11 months' periods of 1918 and 1917 within \$75,000 of each other. In the first 11 months of the current year the exports of machinery aggregated \$257,412,268 against \$257,344,350 in the same period of last year.

On the import side of the ledger the slump continued. The tonnage of iron and steel importations in November, 1918, dropped to 10,839 tons against 14,879 in November, 1917, and 16,000 tons in October, 1918.

Manganese ore and oxide figures showed a decrease both as compared with last month and with last year. They totaled 38,580 tons in November, 1918, as against 44,141 in November, 1917, and 48,917 tons in October, 1918. It is interesting to note, however, that the value of the 38,580 tons imported in November, 1918, was \$1,114,022 against \$642,596 for the 44,141 tons listed in November, 1917.

The records also show an importation of 2,311 tons of tungsten-bearing ore against 622 tons in November, 1917, and 4,329 tons of chromate of iron and chromic ore in November, 1918, against 1,482 tons in November, 1917.

The importation of iron ore in November, 1918, was 74,698 tons, valued at \$514,382 as against 133,133 tons in November, 1917, valued at \$526,363.

## Sand Mixer and Bucket Loader

The sand mixer and bucket loader here illustrated, is in use for the mixing of steel facing and core sand in the plant of the Electric Steel Co., Chicago. The machine has advantages in that it feeds a measured



Increased Production and Uniformity of Mixture Are Claimed for the Bucket Loader and Mixer Illustrated

amount of sand into the mixer and also secures the maximum capacity of the latter, as a charge is ready to feed into the mixer as soon as the previous batch has been discharged.

The machine is a No. 2 Simpson sand mixer, 6 ft. diameter, manufactured by The National Engineering Co., Chicago.

## Export Opportunities

Maximilian Kahn, 71 Wall Street, New York, and Suchet Singh and R. Lay, both natives of India, who have been in the United States for several years, have formed a company which will do an export and import business with India. Mr. Singh will sail shortly for that country and desires to take with him catalogs and other literature from manufacturers of all kinds of machinery, including machine tools; metal products and manufactured specialties. Letters and catalogs should be addressed to Mr. Kahn at 71 Wall Street, New York. Mr. Lay will remain in this country. He has completed a course in engineering at Columbia University, following three years' study along the same line in England.

Sture Osmar, vice-president and general manager of Lindstedt & Co., Stockholm, Sweden, has sailed for America and will arrive within the next two weeks. The purpose of his visit is to make agency arrangements with American manufacturers of machine tools and accessory lines. Mr. Osmar, while in this country, will make his headquarters with the Swedish Gage Co., 245 West Fifty-fifth Street, and correspondence may be addressed to Mr. Osmar in care of this company.

The War Trade Board announces that all persons in the United States are authorized, subject to the rules and regulations of the board, to trade with persons residing in the states of Alsace and Lorraine.



## ELECTRICALLY-HEATED OVENS

### Construction and Operation of Enameling Ovens —Efficiency of Different Types Compared

The inner walls of an enameling oven, essentially a heat-insulated room, consists of thin sheet metal and the insulator may consist of powder, blocks or bricks. Where powder or blocks are used, the insulator is placed between an inner metal lining and an outer lining, thus practically making one sheet metal box within another. The wall is built up around the inner metal lining in the same manner that masonry is laid, when insulating brick is used.

Almost no attention was formerly paid to the kind of thickness of insulation, or oven construction in general, so far as retaining the heat in the oven was concerned. Gas being a very cheap fuel, it was not considered necessary to go to any particular expense on good heat-insulating qualities. It was very seldom that one would see an oven with 2-in. insulation, 1 or 1½ in. being the rule. Moreover, this insulation was of a very poor quality.

Another feature pertaining to oven design that had been absolutely neglected was the amount of metal connecting the interior of the oven to the exterior surface, or as it is now termed, the amount of through metal.

The sectional area of the metal extending through the oven, even in the earliest types of ovens where no attention was paid to through metal, would appear to be relatively small in proportion to the insulating surface. There is another property which shows up this difference in relative area exposed to the interior and exterior oven surfaces, i.e. the thermal conductivity of the material. One sq. in. of metal extending from the interior to the exterior surface of the ovens will conduct as much heat away to the atmosphere as 7 sq. ft. of the highest grade insulation obtainable at this time.

The hand-operated kiln or box oven is an insulated room into which the work to be baked is carried by hand and hung up in place on suitable racks or hooks.

The truck-operated kiln or box-type oven is an oven similar to the hand-operated on trucks which are wheeled into the oven and remain there with the work.

The semi-continuous conveyor type oven is an oven having doors at both ends, with an overhead conveyor

running directly through the oven. This conveyor is usually a continuous chain passing through the oven and returns over the top. With an oven 20 ft. long the conveyor extends in a horizontal plane at least 20 ft. on either end of the oven. A batch of work is dipped in the enamel and hung on the conveyor to drip for approximately 15 or 20 min. After this period the conveyor is started and the work moved into the oven. During the time that it takes the first batch to bake, the second is being dipped and hung on the conveyor. When the first batch is baked the conveyor is started up, the first being carried out and the second batch put into the oven. A third batch is then dipped and hung on the conveyor, while the second batch is being baked, and the first batch removed from the conveyor. The operation continues indefinitely.

A continuous conveyor type oven is an oven having a conveyor running through, which operates continuously and not intermittently as in the case of the semi-continuous conveyor type. The work is hung onto a moving conveyor or chain and carried directly into the oven. The speed of the chain, the length of travel and the temperature of the oven must be such that by the time the work reaches the exit the enamel has been thoroughly baked. Ovens of this kind require the doors open continuously. To prevent heat losses through these openings and to keep the smoke and vapors from filling the enameling room, the oven must have an air seal around the opening or an exhaust fan used at the proper point of the oven to secure an air balance, and at the same time provide ample ventilation.

Non-insulation of the floor is a very serious mistake in view of the desirability of obtaining uniform temperature throughout the oven. The majority of ovens have floors of concrete. The thermal conductivity of concrete varies with the proportion and kind of material used in mixing, but for the average floor it will be approximately five, a conductivity ten times that of an insulated wall of the same thickness. The greater thickness of a concrete floor offsets in a measure the increased thermal resistance of the oven walls, but not sufficiently. This loss is now taken into consideration and the floor insulated to a thickness equivalent to half of that of the oven walls.

Experiments by the Westinghouse Electric & Mfg. Co. led to the following conclusions:

The hand-operated kiln-type oven is the most inefficient type of oven used. The work must be carried

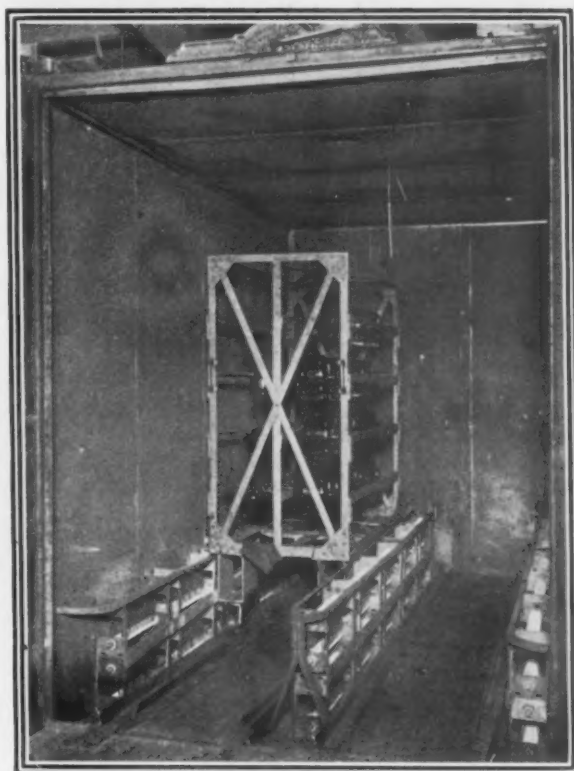


Enameling Oven Showing Heaters on Wall Behind a Protecting Screen





Heaters on Side Walls Only, Ventilation, at Sides and in Floor of Oven



Enameling Oven with Heaters Along the Walls and in Center of Oven

in by hand, therefore the oven cannot be at a very high temperature during the loading period. Also, after the baking has been completed the oven doors must be opened and the oven allowed to cool down to about 150 deg. Fahr. before the workmen can enter the oven for removing the work. Before the oven can then be loaded, ready to be put into operation again, the temperature has been down to that of the room. This means that in almost every case this type of oven must be heated from approximately room temperature up to maximum baking temperature for every bake that is obtained.

With the truck-operated kiln-type oven the doors may be open a much shorter period than where ovens are hand-operated, from 5 to 10 min. being ample time after the doors have been open for removing the trucks and running other trucks into the oven.

The semi-continuous-conveyor oven is about on a par with the truck-operated oven in so far as the efficiency of the oven itself is concerned. Since the work progresses through the oven, both ends of the oven must be laid wide open when loading, with the consequent result of a large cooling effect. Ovens of this type will drop from 450 deg. to 250 deg. while this change is being made. The total weight of the conveyor in proportion to the amount of work entering the oven per bake is probably not as great with this

type of oven as in the case of the truck-operated oven, hence the efficiency of operation is improved in this particular. The overall efficiency, however, is approximately the same as the truck-operated oven.

The continuous conveyor-type oven is the most efficient type and is largely used in the automobile industry. The oven operates continuously at one temperature, requires a minimum of ventilation and a conveyor of minimum weight. The net result is that the latest designs of continuous conveyor-type ovens have an efficiency in excess of double the amount obtained by the best semi-continuous conveyor-type oven.

The efficiency of the above types of ovens manufactured by the Westinghouse Electric & Mfg. Co. at East Pittsburgh, Pa., expressed in pounds of work or finished products per kw.-hr. consumption for ovens of the latest of each of the respective types, having the highest grade insulation, proper ventilation and intelligent operation of the oven, is as follows:

Kiln-type oven, hand-operated: 6 to 8 lb. of work per kw.-hr.

Kiln-type oven, truck-operated: 10 to 12 lb. of work per kw.-hr.

Semi-continuous conveyor-type oven: 10 to 12 lb. of work per kw.-hr.

Continuous conveyor-type oven: 25 to 30 lb. of work per kw.-hr.

### Wage Advance for Sheet Mill Workers

YOUNGSTOWN, OHIO, Jan. 14.—Sheet mill operatives will receive a wage advance of 7½ per cent for January and February as a result of the bi-monthly settlement here between the National Association of Sheet and Tin Plate Manufacturers and the Amalgamated Association of Iron, Steel and Tin Workers. Examination of selected sales sheets showed an average sales price of \$5.25 for Nos. 26, 27 and 28 gage black sheets, as against \$5 two months earlier, and \$7.85 for tin plate, per base box, the same as at the last settlement. Wages of tin mill workers are therefore unchanged. The old Government maximum for No. 28 gage black sheets was \$5, and for tin plate per base box was \$7.75. Both sheets and tin plate reached their highest average price in the last two months of 1917, when, despite Government price fixing several months before, the average sales price of sheets was \$5.50 and of tin plate was \$8.60.

### Manganese Ore in Uruguay

WASHINGTON, Jan. 14.—Consul William Dawson, at Montevideo, has made a special report on manganese ore in Uruguay. Pockets and traces of manganese, he says, are found in practically all parts of Uruguay. But most of the deposits are too small or too poor in quality to make exploitation worth while. In other cases lack of transportation facilities and timber stand in the way of successful operation. One of the principal deposits is found in the Department of Riviera near the Arroyo Zapucay. It is estimated that 80,000,000 tons could be taken out by open cuts. The analysis shows an average content of 34.8 per cent iron, 22.7 per cent manganese, 9 per cent silica, 0.03 per cent phosphorus and 0.05 per cent sulphur. As far as is known, the only manganese deposit in Uruguay being worked on any scale at present is a 16-ft. vein composed of small stringers, located at the Pantanoso, in the immediate vicinity of Montevideo.

# Developments in the Rennerfelt Furnace

## Important Changes from the Original Design—Side Electrodes Now Tilt — Shape of Shell Is Round

BY H. A. DE FRIES AND JONAS HERTENIUS\*

AT the beginning of 1918 there were about 20 Rennerfelt furnaces in operation on ferrous and non-ferrous metals throughout the United States. Some of the furnaces were of the original Swedish square or rectangular type, while others were improved with round shell and dome-shaped roof. Extensive experiments and conclusive tests have been conducted resulting in a Rennerfelt furnace in which are incorporated all the latest developments in electric furnace construction.

The first change was the employment of a round shell with removable dome-shaped roof, which brought with it a better heat distribution and a more accessible hearth. Heavier material was used in the construction and electrode feeding mechanisms were much improved. As it is to-day, all furnaces, from one-ton capacity upward, are equipped with automatic side electrode feeding and auxiliary push-button control. Electrodes are made adjustable in all directions, and electrode ports are made air tight. The electrode feeding motor is made part of the electrode holders.

Originally, all furnaces, even the largest types, were tiltable about central trunions, and the tilting was accomplished by rack, pinion and worm gearing, worked by motor. This naturally carried with it a large movement of the spout. The three-ton and larger Rennerfelt furnaces are now furnished with a cradle and rack. To answer a special purpose, two furnaces now being installed are equipped with tilting fulcrum at the pouring lip. These furnaces are set on a cradle and are bodily lifted by motors. This arrangement will enable pouring of small ingots and castings without the use of intermediate ladles.

The inside diameter of the various sizes has lately been considerably increased without changing the capacity rating. In other words, the depth of the bath has been decreased. A shallow bath will give a larger contact surface between the metal and slag with consequent higher reaction velocity. In view of this, the time for desulphurizing and killing in the basic process is considerably shortened and a superior steel is obtained, free from slag inclusions and hard spots. The steel is furthermore thoroughly deoxidized and the percentage of impurities is reduced to a minimum. Additional power has been placed behind the furnace proportional to the increase in diameter, and this, in

connection with the shallow bath, makes the melting more rapid and uniform.

The generation and proper application of the heat is one of the most important factors in the electric furnace, especially in the free-burning arc furnace. By actual experiments it was found that the highest efficiency and best working condition in the Rennerfelt furnace is obtained at a certain fixed and constant distance between the electrode tips and the top of the charge. In order to apply this rule to the furnace it was necessary to allow the electrodes to follow the charge as it is melting down, or, in other words, make

the electrodes tiltable in a vertical plane. This design met with considerable difficulty in the beginning, due to the fact that large electrode ports are needed which gave excessive air leakage. The difficulty was finally overcome by applying especially designed plate or stuffing boxes, external to the shell, which allow the electrodes to be tilted at the maximum angle without leakage.

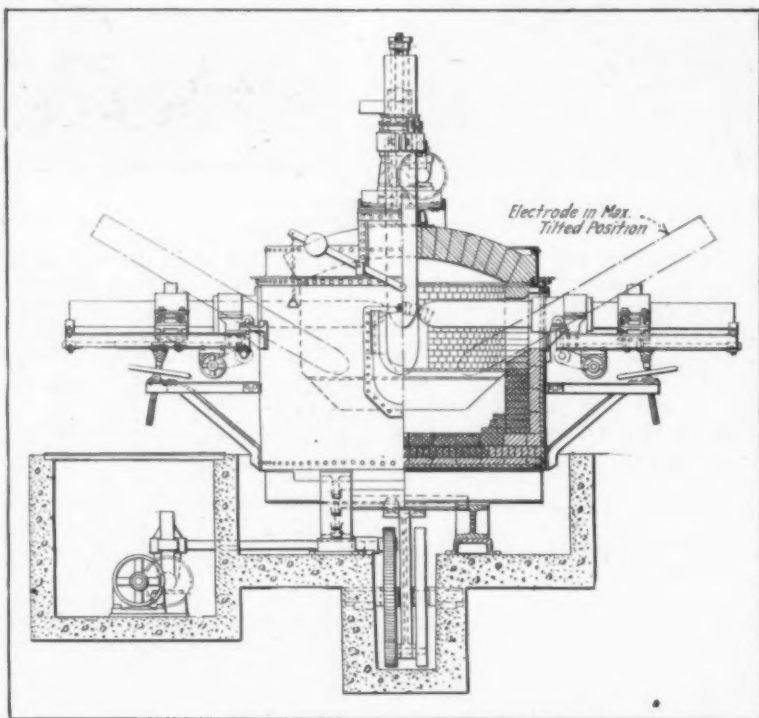
As a natural result of these improvements it was considered advisable to raise the electrodes, and this has been done on all of the Rennerfelt furnaces lately manufactured. In the furnaces of older design, danger

always existed of breaking electrodes during charging, slagging off, etc. With electrodes high up, almost above the top of the door opening, the whole charge, even bulky scrap, can be introduced without interfering with the electrodes and slagging off can be facilitated by tilting the electrodes upward.

Some people have objected to the Rennerfelt furnace on account of its side electrodes, claiming that this peculiar construction would warrant excessive breaking of electrodes. The side electrodes are oversized in all the latest designs in order to make them as strong as possible. As almost all other furnace types are tiltable, conditions similar to those in the Rennerfelt will arise and only stationary furnaces have the advantages of having the electrodes always in a vertical position.

The latest and most important improvement in the Rennerfelt furnace is the tilting of the side electrodes to such an extent that arcing to the slag can take place. With the side electrodes in this position and the top electrode sufficiently low the furnace can work as an arc resistance furnace with slag and metal as part of the circuit.

The free burning arc for melting cold scrap will assure an even and steady operation with a current



Section of Remodeled Rennerfelt Electric Steel Furnace

\*The authors are chief engineer and metallurgist respectively for Hamilton & Hansell, New York agents for the Rennerfelt furnace.



demand from the high tension mains perfectly balanced at a high power factor. Any undesirable current fluctuations and surges on the line are avoided and the automatic electrode control can be used from the very beginning of the melting. The loss by oxidation or burning is less and the danger of introducing carbon from the electrodes into the metal is also avoided.

If any amount of refining has to be carried out, the electrodes are tilted at the necessary angle and the furnace will work as an arc resistance furnace. The latter is of the utmost importance during the desulphurization period in basic operation, especially on tool steel when a heavy white slag covers the steel.

The top electrode is lowered and the side electrodes are tilted downward until they are about 2 in. from the liquid bath and short arcs are drawn between the carbons and the slag. The heat is, therefore, more readily transferred and taken up by the steel and a higher temperature is reached without danger of superheating the roof and side walls. The use of a carbide slag instead of a ferrosilicon slag is made possible. This shortens the operation and reduces the cost. The current passing through the metal bath from one electrode to the other will also create certain circulations of very important effects, especially in thermal conduction of heat and in absorption and assimilation of added alloys. The metal bath is a movable conductor in a magnetic field.

It will be only a question of time when the power companies will enforce stricter rules for steadiness in operation to obtain a more balanced condition on their high tension line with a higher power factor. Another benefit derived from properly applied electric heating is an extremely long life of the lining, up to 450 heats on one roof for steel castings, less electrode consumption, less metal loss and a superior product.

#### Annual Banquet of Wisconsin Manufacturers' Association

MILWAUKEE, WIS., Jan. 14.—John W. O'Leary, Chicago, president National Metal Trades Association, was the guest of honor and principal speaker at the annual banquet of the Wisconsin Manufacturers' Association, held in conjunction with its annual meeting in Milwaukee, Jan. 9 and 10. Mr. O'Leary spoke on the vital elements of reconstruction, which he classified as follows: First, the prompt adjustment of claims accruing under the suspension of war contracts; second, the immediate passage of legislation relating to unfinished war contracts; third, the early release of Government control of prices and industries; fourth, the re-employment of labor, and fifth, arrangement to care for the just claims of thousands of sub-contractors.

A. J. Lindemann, president A. J. Lindemann-Hoverson Co., stove and range manufacturer, Milwaukee, put forth the idea of "Collective Bargaining" as a means of overcoming virtually difficulties in the labor situation, or strife between labor and capital. He said in part:

"Collective bargaining is a union, not of the workmen alone, but between labor and employer, which, of course, is the most desirable possible combination. It gives the workman instant access to his employer on the grounds of a mutual understanding; brings the employer into close and intimate touch with his men, and gives in the majority of cases an understanding of any reasonable demands. I can find no better words to express the principles of collective bargaining than to repeat that it offers the ideal union between employer and worker."

The election of officers resulted as follows: President, C. A. Johnson, president Gisholt Machine Co., Madison, Wis.; vice-president, Judson G. Rosebush, Appleton, Wis.; treasurer, Frank J. Sensenbrenner, Neenah, Wis. A secretary will be elected later, William George Bruce, general secretary Milwaukee Association of Commerce, having declined re-election. The directors are: Otto H. Falk, president Allis-Chalmers Mfg. Co., Milwaukee; Walter J. Kohler, president Kohler Co., Kohler, Wis.; H. J. Hirschheimer, president LaCrosse Plow Co., LaCrosse, Wis.; W. L. Davis, Eau Claire, Wis., and the officers.

#### Report of the Bureau of Standards

Though it is brought up only to the ending of the fiscal year ended June 30, the report of the director of the U. S. Bureau of Standards is a remarkable wartime showing. As was the case with all industrial labors, and the bureau is so closely linked with manufacturing as to be not unfairly mentioned in the same category, there was a big turnover of personnel. There were of record for the year a grand total of 1405 employees, but there were 757 separations from the bureau, 568 promotions, 1533 appointments, 288 resignations—a total of 2955 changes in the personnel. With all the discouragement of this fluidity of force, Director Stratton briefly accounts for a series of 312,563 tests, of which 31,571 were made for the national or state governments.

Of the investigations pertaining more particularly to the iron, steel and metal-working fields there was work done in the direction of a larger use of native dolomite deposits in making bricks for metallurgical purposes. Inconclusive as was the study from a practical viewpoint the results are claimed to warrant further experiment. Research has been made on the casting methods followed by several foundries in handling Government bronze, and the effects of small additions of various metals to this material, and to aluminum have been studied. Special alloys have been made and examined. Sand investigations were carried out on the reclaiming of "burnt" material, the production of artificial sands, the establishment of standards and development of tests.

An investigation of the use of manganese and other agents for the deoxidation of steel is planned to render the country less dependent on foreign sources for these ores. The bureau asserts there is considerable duplication and confusion about metal specifications for the army and goes on to make the direct statement that "some of the military departments need the advice and experimental facilities the Bureau of Standards can offer." This conviction is backed with the recommendation that a single board be established for army metal specifications.

On the subject of heat treatment the bureau proposes that the popular terms "quenching in oil," "quenching in hot water," etc., be put on a scientific basis and the treatment standardized to "a cooling rate of 93 deg. C. per second through the transformation range" as determined by the Einthoven galvanometer.

Of the labors toward tin conservation, studies of brass failures, investigation of railroad material, of light aluminum alloys, of protective metal coatings, of bearing metals, of solders, etc., the record shows industrious service.

#### Large Decrease in Steel Corporation Orders

Unfilled orders on the books of the United States Steel Corporation Dec. 31, were 7,379,152 tons, compared with 8,124,663 tons on Nov. 30. This is a decrease of 745,511 tons, the largest decline of any month in over a year. The unfilled orders a year ago or on Dec. 31, 1917, were 9,381,718 tons. The table below gives the unfilled tonnage for the Steel Corporation at the close of each month beginning with January, 1915.

	1918	1917	1916	1915
January .....	9,477,853	11,474,054	7,922,767	4,248,571
February .....	9,288,453	11,576,697	8,568,966	4,345,371
March .....	9,056,404	11,711,644	9,331,001	4,255,749
April .....	8,741,882	12,183,083	9,829,551	4,162,244
May .....	8,337,623	11,886,591	9,937,798	4,264,598
June .....	8,918,866	11,383,287	9,640,458	4,678,196
July .....	8,883,801	10,844,164	9,593,592	4,928,540
August .....	8,759,042	10,407,049	9,660,357	4,908,445
September .....	8,297,905	9,833,477	9,522,584	5,317,618
October .....	8,353,293	9,009,675	10,015,260	6,165,452
November .....	8,124,663	8,897,106	11,058,542	7,189,489
December .....	7,379,152	9,381,718	11,547,296	7,806,220

The Belgian Legation at Washington has received a cablegram from the Belgian Government stating that the best organization to satisfy the demands of American merchants and manufacturers is the Comité Central Industriel De Belgique, Brussels. The Government is compiling information in regard to the present condition of Belgian industry.



## STANDARDIZED PANEL SYSTEM

### Interchangeable Parts Designed for Quick Assembly and Dismantling in Automobile Construction

In the development of a large delivery car project for Chicago and Detroit interests, it was decided to originate a system of body construction that would eliminate rattling in body paneling, make it unnecessary to perforate the edge of the panels for fastening, and provide a simple means by which the panel could be given a pronounced tension in erecting, with provision for renewing the tension at any time the racking strains in service might make this necessary. It was further sought to devise a panel in standard sizes which might be procured from dealers anywhere, and which could be placed in position with no other tools than a screw driver in a short time.

With these several requirements in view, a system of paneling was devised by Robert G. Pilkington, motor traffic engineer, Jackson Park Station, Chicago. It is covered by a basic patent. The system consists essentially of formed metal panels, channels and supporting members, all standardized and interchangeable. The panel has on either two or four edges a bead which is formed from the metal of the panel

itself. While the bead may be of any desired section, a triangular bead lends itself to a greater variety of uses, and because the combination of parts is such that the greater the stress placed upon the bead by the screws, the more solidly the bead becomes compressed, only giving away when the unsupported wall buckles under the strain.

The supporting members are generally made of two similar pressings, spot welded together. At intervals along the surface which becomes the center of the member, a "half-hole" is pressed, and when the two pressings are spot-welded together, there is formed a hole that is tapped for compression screws. This method gives a continuous support along the entire edge and prevents buckling. Tightening the compression screws forces the folded edge of the separator down against the triangular bead. The inner edge of the bead acts as a wedge, pulling in opposite directions on opposite edges of the panel, with the result that the panel is drawn straight and flat. If the structure becomes loosened, it may be stiffened to its original condition, by tightening the compression screws, provided the loosening process has not been allowed to go on too long.

Two slightly different types have been designed, both having the supporting members made from the same blank, so that one type may be mounted on one side and the other opposite. It is thus possible, by using proper combinations, to obtain a variety of construction with speed in erecting or dismantling. An emphasized feature is that electric wiring may be readily installed, and another is that the system may be mounted on any of the familiar materials of construction, or complete structures may be fabricated. No. 1 type is adaptable where a permanent construction is desired, and No. 2 where permanence is less desirable, as in a factory partition. In assembling, the

panels of the No. 2 type are held against the supporting members and snapped in place with a quick sharp push.

The system is considered adaptable also for contractors' buildings for housing electric, pneumatic and hydraulic machinery; storage buildings for volatile liquids; mine buildings; factories where enameling, japanning and other ovens are inclosed, the use of the panels giving flexibility when it is desired to enlarge the inclosed spaces. The construction is practically fire and sound proof, and should a few panels be damaged by fire, it is an easy matter to replace them.

### Why Hardened Carbon Steels Slowly Contract

It is a well-known fact that hardened steel contracts very gradually during a long period of time ranging over several months, this contraction being accompa-

nied by a gradual evolution of heat, but the cause of the phenomenon is not yet clearly known. An investigation of it by Mr. Brush and Sir R. Hadfield led them to the following conclusion, reported in the *London Iron and Coal Trades Review*:

"After being quenched, a hardened steel is in a highly strained state, and somewhat unstable, especially at first. Gradual relief of the strain causes a spontaneous generation of heat accompanied by a contraction of the specimen, until sta-

bility at room temperature is reached. But as has been already remarked by Mr. Brush, the quantity of heat evolved is too great to be accounted for by the relaxation of the internal strain caused by quenching. Hence the further study of its nature was very desirable, not only from the practical point of view but also from theoretical considerations. Tokujiro Matsushita has recently re-investigated the phenomenon under the direction of Prof. K. Honda, and has published his results in a recent issue of the *Science Reports of the Tôhoku Imperial University*. They are summarized by him as follows:

"In the case of imperfectly hardened steels, there is a gradual elongation, or an elongation associated with a subsequent contraction.

"In well-hardened steels there is always a gradual contraction.

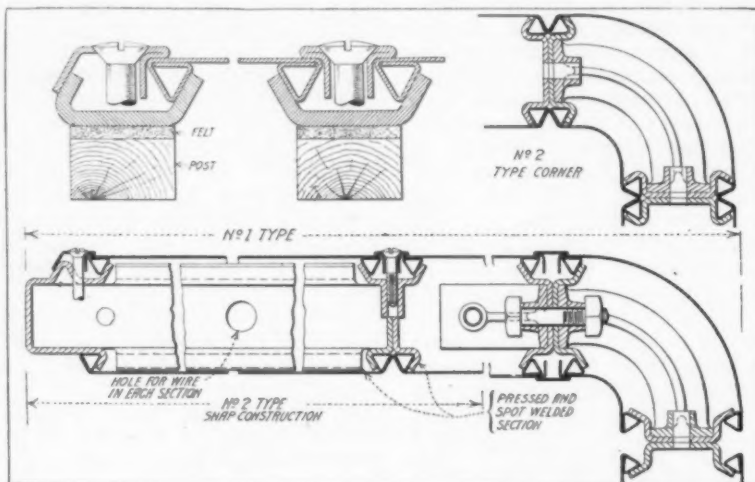
"The elongation is explained by the incomplete  $A_1$  transformation, while the contraction is due to the separation of an unstable cementite from its solid solution—the martensite.

"The complete separation of the first unstable cementite at room temperature requires several months or over one year; but by heating the steel to about 100 deg. C., the same separation follows within two hours.

"The separation of the unstable cementite does not affect the hardness of the steel appreciably; but the separation of the more stable cementite is associated with a loss of hardness.

"The electric resistance of a steel considerably increases by quenching, and decreases by tempering; this increase is due to the cementite in solid solution.

"The gradual elongation or contraction of quenched steel is always accompanied by an evolution of heat, which is the heat of transformation, but is not caused by yielding strain, as was generally supposed to be the case."



Pilkington System Sheet Metal Panel Construction Types, Adaptable for Automobile Bodies, Office or Factory Partitions, Portable Houses, Etc. On the No. 1 type, compression screws hold the panels in place and draw them straight. The panels in the No. 2 type are snapped into place. The type of joint used where panels are supported by wooden posts is shown in the upper left hand corner of the drawing

## Analyses of High Speed Steel

High speed steel, unlike other grades of steel, is sold in most cases by brand, irrespective of analysis. There remains a peculiar superstition among many consumers that, unless a steel bears a certain brand, they do not obtain the desired results from its use. There is considerable justification for this belief in some instances, according to the *Journal of American Heat Treaters Society*, Chicago, especially in the case of the small user, because if he once gets a steel that fills his requirements, he may easily become prejudiced against others. However, it may be said that this superstition is rapidly losing ground among the large manufacturers who use a large enough tonnage of high speed steel to warrant the maintenance of either a metallurgical laboratory or some sort of testing equipment.

The chemical analysis of high speed steels is, in itself, a complicated procedure for the average iron and steel analyst, and the metallography of these alloys may be said to be in the development stage at the present time. Besides the chemical and metallographic characteristics of these alloys there remains the physical properties, and this consideration is one often receiving less attention than it should. When high speed steel fails in its performance the cause usually lies in its chemical constitution, its physical properties, or its heat treatment. Besides these three considerations there is another extremely important factor upon which the proper performance of high speed tools depends, and that is the degree of intelligence employed by the actual user of the tool. It has been rightly stated that more high speed steel is spoiled because of ignorance and carelessness in the proper use of the tools than from any other reason.

Chemical and physical defects may, of course, be blamed on the steel mill, but faulty heat treatment is up to the consumer, unless he purchases his tools already treated. When high speed steel fails in its performance, nine times out of ten when the steel is treated in the average tool room it is the fault of the heat treatment it has received, provided, of course, that the tool has been used properly. Chemical analysis, physical properties and heat treatment are so closely interrelated that a knowledge of all three is necessary in determining why one steel behaves more efficiently than another. Chemical constitution is one of the basic considerations and a slight change in the analysis may require a modification of heat treatment or may materially affect the behavior of a tool in service.

Following is a table giving the analysis of 14 widely used brands of high speed steel. This table represents an average of over 1000 analyses, and in no case was there less than 50 separate samples of each brand analyzed. The sulphur and phosphorus contents are not given and in these steels will seldom be found to exceed .02 per cent:

Brand	Carbon, Per Cent	Tung- sten, Per Cent	Chro- mium, Per Cent	Vana- dium, Per Cent	Cobalt, Per Cent	Uran- ium, Per Cent	Silicon, Per Cent
1	0.68	18.21	3.86	1.79	....	....	0.14
2	0.72	17.38	4.24	1.25	....	....	0.10
3	0.68	17.56	3.77	0.89	....	....	0.13
4	0.66	17.36	3.07	0.99	....	....	0.16
5	0.60	17.35	3.37	0.76	....	....	0.13
6	0.63	17.92	3.87	0.71	....	....	0.11
7	0.62	17.53	3.98	0.61	2.73	....	0.08
8	0.67	17.87	3.63	0.18	....	....	0.17
9	0.66	16.78	3.71	0.76	....	....	0.13
10	0.64	16.08	3.42	1.06	....	....	0.39
11	0.67	14.00	3.99	1.61	....	0.47	0.17
12	0.65	13.84	3.14	0.76	....	....	0.17
13	0.71	12.41	4.72	1.14	....	....	0.22
14	0.64	11.58	4.18	1.74	....	....	0.24

It will be noted that the carbon content varies from 0.60 to 0.72 per cent, tungsten from 11.58 to 18.21 per cent, chromium from 4.72 to 3.07 per cent, vanadium from 0.18 to 1.79 per cent. While these differences undoubtedly manifest themselves in the behavior of the tools, it may be said that each of these steels, if properly treated, is capable of giving excellent service for the particular work for which they have been designed.

## Soldering of Zinc

So many demands are being made on zinc these days for replacing other non-ferrous metals, the supply of which is limited, that it is interesting to learn with what facility soldering operations in connection with the use of rolled zinc may be accomplished. The process is, in fact, a simple one that entails no more labor than is required for soldering tin.

While it may not be generally recognized that sheet zinc, now so much used as a material for commercial work, is one of the easiest metals to solder, this is nevertheless the fact. According to W. H. Hendricks, general sales engineer of New Jersey Zinc Co., experienced operators claim that zinc is the most easily soldered of all sheet metals. However, he emphasizes that in order to obtain good results it is necessary that the operator be familiar with his work.

Most failures in the attempt to secure joints of the desired strength and quality where sheet zinc is concerned, it appears are due to overheating the metal. This may occur from too long an application of the soldering iron or due to its being overheated. As in similar operations on tin, other details also contribute to obtaining the highest efficiency in the work, but these can be easily mastered by any workman who is familiar with the general operation. Only a quick pass of the soldering iron over the metal is needed to produce a very stable joint. Otherwise, the zinc is either melted or its internal structure becomes changed by the overheating, with a resultant weakening of the metal, a condition that frequently produces this complaint.

It is quite important to know that sheet zinc melts at a temperature of 419 deg. C., or 786 deg. Fahr. Unlike the soldering of tin, the best results are obtained by using a soldering iron that has not become so hot as to be dull red in color. Less than 500 deg. C., or 932 deg. Fahr., are necessary in getting the iron to the proper temperature to solder joints, when sheet zinc is utilized, by the quick application above referred to.

It is customary to use half and half solder. Preceding the actual operation, a "cut acid" fluxing solution, or a solution of zinc chloride acidulated with muriatic acid, should be applied to the metal being prepared for the work.

Modern automatic soldering machinery has been installed in various plants where a large number of zinc articles are made. This has lessened to a marked degree the difficulties once thought to beset those who derive their livelihood from working this metal, but the hand method gives equally satisfactory results when employed by experienced workmen.

## Carnegie Steel Co. Annual Dinner

The twenty-second annual dinner given by executive and operating officials of the Carnegie Steel Co. was held in the Wm. Penn Hotel, Pittsburgh, Saturday evening, Jan. 4, and was largely attended. Special guests at the dinner were Judge E. H. Gary, chairman, and James A. Farrell, president, United States Steel Corporation. James H. Reed, of Reed, Smith, Shaw & Beal, general counsel of the Carnegie Steel Co., was toastmaster. The first speaker was Judge Gary, who talked extemporaneously on "Friendship."

Other speakers and their topics were C. L. Wood, "War and Salesman"; William Whigham, "War and By-Products"; A. A. Corey, Jr., superintendent of the Homestead Steel Works, "War and Products," and Homer D. Williams, president Carnegie Steel Co., "War and Co-operation."

While in Pittsburgh, Judge Gary, President Farrell and officials of the Carnegie Steel Co., made a trip of inspection to the new Liberty plate mill at Homestead, this being the first time that Judge Gary had seen this large mill, which was erected and put in operation in the short time of six months, and has since made some great records for output. For more than a year the entire production of the plant was taken by the Government.



## THE CHECKS TO EXPORTING

### Inequitable Ocean Freight Rates, Cancellations and Difficulty of Guaranteeing Shipments

WASHINGTON, Jan. 14.—Although the War Department is continuing the release of ships for commercial purposes, the foreign shipping situation is still decidedly bad. This is especially true of our commerce with South America, where serious cancellations of orders are reported both by the industries and by the Department of Commerce.

The latter has tried to secure a definite statement of the South American situation from our consuls there but has merely succeeded in increasing the pessimistic view held by exporters generally. The cancellations are reported to be the result of the failure of American exporters to ship promptly as well as of the enormous difference in freight rates in favor of Liverpool as against New York. Besides this the reports from South America show that the English exporters are now able to guarantee shipments where Americans must take long chances on getting their cargoes to South America. The reports also say that British exporters are beginning to put peace-time prices into effect, and this has helped to frighten the importers who had ordered on a basis of war figures. These are now seeking to cancel their orders, and nothing that either the Department of Commerce or the Department of State has been able to do has had any effect in stabilizing the situation.

The general advices of Washington officials has been against attempting to stop cancellations by legal measures because of the bad effect this would have upon future commercial relations. They also point out, however, that there is no value in a mere propaganda that attempts to convince South America that there will be no reduction in peace-time prices as against war figures. A general extension of financial credits is looked upon as one of the remedies for the situation, although the chief solution lies in an increase of shipping facilities.

With the arrival in Paris of Vance McCormick, chairman War Trade Board; Chairman Baruch of the War Industries Board (which went out of official existence on the last day of the year just ended), a new stage began in the Government's regulation of business as one of its many war activities. Messrs. McCormick and Baruch went to Europe to advise President Wilson on economic matters, particularly concerning the blockade. It has been expected that in the present month through either some word or some action of Congress a definite policy would be announced regarding the status of war bureaus which are still functioning.

#### Continued Functioning of War Trade Board

Despite the growing demand in certain quarters for immediate removal of all restrictions on trade amounting at times to a demand by certain national legislators that even the espionage and the trading-with-the-enemy acts should be repealed, it is plain that the War Trade Board must continue to function until peace is signed and the blockade officially declared off. Even then the cessation of the Board's activities is by no means foreshadowed, for some agency must exist to control the outgoing stream of foodstuffs to the nations which this country must victual, if a stable market is to be maintained. Restrictions upon imports and exports have been removed so rapidly that practically none remain.

The general situation has cleared considerably of late. Those interested in foreign trade see the opening of a new era for American commerce. Ships are being gradually released, although the amount of tonnage given over by the War Department to the Shipping Board for transfer to trade routes so far has not been appreciable, for the reason that much of the returned tonnage has been the property of allied and neutral governments.

The most recent removals from the export conservation list include practically all explosives and coal tar distillates. Just before the end of the past year iron, steel, copper and their by-products were practically all

removed from the list, while a few days later tin and tin products were stricken off.

#### Import Restrictions of Foreign Countries

The War Trade Board has also announced that the individual applications for export licenses to France and Italy would no longer be referred to the High Commissions of those countries. It cautions exporters, however, to be careful before shipping to acquaint themselves thoroughly with the import requirements of the country of destination, as certain of the regulations which were in force prior to the signing of the armistice are still in force and effect. Information as to French import restrictions may be obtained by applying to the French High Commission, Fifteenth and M streets, Washington, D. C., and as to the Italian import restrictions, to the Italian High Commission, 1712 New Hampshire Avenue, Washington, D. C.

The present procedure of transacting export business to the northern neutrals has been greatly simplified, according to an announcement by the board. This includes Sweden, Norway, Denmark and Holland. Licenses for the export of articles now on the free list to these countries will be issued freely, subject only to such import restrictions as may be imposed by the country concerned. Recent relaxations in export restrictions and the new simplification of procedure afford wide opportunities for the enlargement of export trade to these four northern neutrals, it was stated, especially since commodities to be exported may now be shipped to those countries on any vessel instead of only on vessels flying the flag which belongs to the country of destination.

#### The Building of Merchant Ships

The formation of a definite Government policy relative to the further construction of ships and their cost in order to increase the American merchant marine to meet our post-war needs is being considered by Congress. Chairman Fletcher of the Senate committee on commerce declared that "the necessity for ships now is almost as acute for commercial purposes as it was for military purposes," and added that "England is planning to build 2,000,000 tons annually and France 3,000,000 tons, while the United States has the yards to build 6,000,000 tons annually."

Chairman Edward N. Hurley of the Shipping Board will probably return with the President and the new policy of the Shipping Board will then be announced. In the meantime the board is continuing the construction of steel and some wooden vessels, and is operating vessels returned by the War Department. A definite building program designed to make this country's merchant marine the largest trade flotilla in the world will be agreed upon when Chairman Hurley returns. During 1918 American shipyards built 1882 vessels of 2,721,281 gross tons. This total, save 124,000 tons, represented seagoing ships.

#### Releasing Foreign Ships Now Under Contract

The Shipping Board announces that vessels of neutral countries now under charter to the Shipping Board will be released as fast as existing contracts expire. The board announced that 357 vessels, chiefly Norwegian, Danish, Swedish, and Dutch, will be affected but that the charters have from one to seven or eight months to run. After the ships are released the board will retain the right to supervise rates and conditions under which they shall operate if they continue to engage in trade out of American ports. Control of all neutral shipping engaged in American trade was assumed last April by the board by the passage of a resolution under which the board refused to approve any chartering of this tonnage except to the Government.

#### British Export Concessions

The British Government has announced further export concessions, according to a cablegram sent to the Department of Commerce by Consul General Robert P. Skinner at London. A general license has been issued for the exportation of the following goods to all non-European destinations. Fuel economizers constructed of cast

iron pipes used as auxiliary heating apparatus in connection with land or marine boilers; guttering and cast-iron gutter fittings and connections; pipes; cast iron and cast-iron pipe fittings and connections; radiators manufactured of cast-iron pipes; tin plates; terne plates; lead manufactures such as metallic packing containing lead, printing type, coffin furniture, carriage furniture, lead capsules, lead scales, lead toys, lead weights for dressmaking; zinc manufactures such as zinc buttons and zinc stencils, advertising signs made of iron or steel plates or sheet steel, sheets, perforated.

The Department of Commerce has made public the following interesting cablegram received from Consul General Skinner: "Ministry of Shipping announces increased tonnage available for bringing imports to Great Britain by 10,000,000 tons of goods a year. Already amount of space available for commercial cargo in North Atlantic is doubled, and instead of cargo competing for space, space is now competing for cargo."

O. F. S.

### Bills to Compensate for War Losses

WASHINGTON, Jan. 14.—Bills authorizing the Secretary of the Interior "to determine, adjust and pay losses sustained by investment preparatory to production of war minerals" have been introduced in both houses of Congress. Senator Henderson, chairman of the Senate Mines and Mining Committee, introduced the Senate bill, while identical bills have been introduced by several members of the House.

The Senate bill provides that the cost of the investigation of the subject and the payment of claims are to be taken from the money appropriated by the war minerals act and "that said funds and appropriations shall continue to be available for said purposes until such time as the secretary shall have fully exercised the authority hereby granted and has performed and completed the duties hereby provided and imposed."

The Secretary of the Interior is directed in the bills introduced to determine the losses sustained in efforts to produce war minerals "to supply the urgent, published and evident needs of the nation during the war." The bill allows a wide range of claimants, as it covers "money heretofore invested or contracted to be invested and obligations incurred by any and all persons and investors for producing or for the purpose of producing or preparing for producing or acquiring property for producing" the war minerals within the United States.

The producers of manganese, chrome, pyrites and tungsten, were the ones hardest hit by the sudden ending of the war and who seek relief under the provisions of the pending bills. The sudden termination of the war found much work in progress, the profitable completion of which depended upon the continuance of the war and the continuous war demand for the materials which were proposed to be created in this country in order that ships until that time used in the importation from distant places of these products might be diverted to the transportation overseas of American soldiers, food and material.

### Mr. Butler Discontinues Collection of Pig-Iron Statistics

YOUNGSTOWN, OHIO, Jan. 20.—Joseph G. Butler, Jr., announces that he has discontinued the practice of collecting data on blast furnace operations and pig iron stocks, after performing this service for 58 years. At the beginning of each month he was furnished a report of furnace operations and the condition of iron stocks once every three months. This information he compiled and distributed the statistics among the trade. His aim was always to get the information to the producers as quickly as possible, thereby increasing its value. Mr. Butler served for many years as president of the Bessemer Pig Iron Association. Because the work of collecting such data is now being successfully handled by the trade papers and the American Iron and Steel Institute, he has discontinued it.

### The Stobie and Greaves-Etchells Electric Furnaces in England

A writer in the engineering supplement of the *London Times* states that, as a result of efforts to find means to melt the accumulating quantities of scrap borings, turnings, etc., of steel early in the war in Great Britain, two types of purely Sheffield-invented electric furnaces have been put on the market which are being widely adopted in England, while other types are being employed on a large scale and are being constantly improved. He continues:

In briefly describing these Sheffield furnaces—the Greaves-Etchells and the Stobie types—there is no intention to ignore the virtues of others. However, it may be said that until their introduction there was no type of electric furnace of any considerable size that could melt more than a limited percentage of turnings per heat. Large quantities of new raw materials, such as pig iron, bar iron, etc., had to be used along with the turnings and similar scrap. Now, it is possible to have heats of as much as 12 or 15 tons entirely of scrap, such as turnings, against a limit of about 2½ tons before the war.

This great development in electric melting will no doubt stand out as one of the most important metallurgical events of the war, and as a mark in steel trade history second only to the discovery of the Bessemer process. These large electric furnaces can turn out steel which makes sound ingots, and at a less cost than the crucible process, though it may be a long time before the crucible is discarded for the making of tool and other special steels. The electric furnace, indeed, may simply prove a valuable addition to the crucible and the converter, just as the electric light has to gas, without displacing it.

The joint inventors of the Greaves-Etchell electric furnace are both Sheffield men, the former an electrical engineer and the latter a metallurgist. The furnaces are made in sizes of ½, 1½, 3, 6, 9, and 12 tons capacity. The smaller sizes can run a charge every 2½ hr., or nine charges a day, giving an output equal to 36 crucibles of 56 lb., and they can be operated by one skilled man, one unskilled man, and a boy for the ammeter, against 15 men for the crucibles. Again, the cost of renewals is much less with the electric than with the crucibles, and the space occupied is also smaller. This type of furnace is finding favor in America, as well as at home.

Mr. Stobie, another Sheffield man, has aimed at eliminating the chief defects in the larger types of furnace. Previously electric furnaces of any considerable size were apt to suffer from localization of heat to the region of the arcs, rapid destruction of the roof, cutting away of the electrode holes, rapid tapering of the electrodes, and quick loss of heat after tapping. These defects were mainly due to the difficulty of stopping up the gaps around the electrodes where these passed through the roof. The Stobie furnace can be completely sealed up and as there is no chimney effect, no cold air is drawn. A reducing or carbon depositing atmosphere is constantly present. All surface combustion is arrested. The whole of the original sectional area of the electrodes is available for carrying current. The electrodes are of small diameter. There is no heat loss and no waste of current from escaping flame. The electrode holders and gear keep cool without water-coolers. The workers are not subjected to excessive heat. After tapping the heat is retained as in the open-hearth furnace.

Some monthly and yearly records were broken at the Farrell, Pa., steel works of the Carnegie Steel Co. in December. In that month the universal mill broke a previous high record for output made in October, last year, which stood as the record for 12 years. The annual output of semi-finished steel in the Farrell works in 1918 was also the largest in any one year in the history of this plant. The output of steel from the open-hearth furnaces in the Farrell works last year was also greater than in any other year.



## WORLD MINERAL CONTROL

### Dominant Position of the United States—Effect of a League of Nations

WASHINGTON, Jan. 14.—The United States controls about one-third of the world's mineral production of 1,700,000,000 tons. The strategic position of this country is graphically shown by a table compiled by Dr. C. K. Leith, of the U. S. Geological Survey, in a pamphlet just issued on "International Control of Minerals."

"It is clear," reports Dr. Leith, "that a league of nations offers but little advantage as a means of insuring adequate supplies for the United States and that the limitations on the distribution of exportable mineral supplies would probably weigh more heavily on the United States than on any other country. The few minerals for which this country is dependent on foreign countries are offset by so many in which we have a dominance of supply and our financial position is so strong that it appears certain that the United States does not need the aid of a league of nations to insure adequate supplies even of these few minerals. In short, in this respect our entrance into a league of nations would not be based on self-interest. We would sacrifice to some extent an independent and dominant position."

In our dealings with other nations this fact should give weight to whatever emphasis the United States may wish to put on the desirability of international control of minerals. At the same time it imposes a hard task on the United States to arouse the mineral interests to the support of a measure that involves so much self-sacrifice. The value of our annual potential exportable surplus of minerals approximates \$1,000,000,000; that of our necessary mineral imports about \$175,000,000. Our active allies, Great Britain, France and Italy, together have a maximum annual exportable surplus worth perhaps \$325,000,000 and their necessary imports amount to \$265,000,000.

"It seems clear that our effort to make this country entirely self-sustaining in regard to raw materials, which has been especially marked during the war, will need to be modified if we are to adapt ourselves to conditions of international control. Although we may be able to become self-sustaining as to manganese, chromite and potash, by so doing we are cutting off the export market of other countries where these commodities exist in such quantities and grades that they would be, under conditions of free trade, our principal sources of supply. By drawing on such sources we not only get a cheaper and higher grade of product, but we develop a return market for the products in respect to which our natural advantages entitle us to a share in the export trade."

#### Sacrifices in Interest of World Harmony

"The international control of minerals entails difficulties which are especially burdensome on the United States and which at present may be insuperable. The interests of conservation clearly require such control. Moreover, the lesson of the war points to the necessity of overhauling old international understanding and machinery, even though such a task would encounter great difficulties, not the least of which lie in the persistence of human habits and inertia. Whether the time has come to establish a league of nations with economic control can be determined only by our individual and collective answers to the question whether we are willing to make the necessary economic sacrifices, individually and nationally, in the interest of world harmony."

"The mineral industry should fully understand that with international control, efforts to promote export will need to be modified and curtailed; that expansion of our trade in many lines will mean equivalent loss of trade to other nations; that the almost universal conception that expansion of foreign trade is a meritorious aim and end in itself, without regard to its effect on other countries, will need revision."

## ADJUSTING CONTRACTS

### Work Is Proceeding Without Delay Under Assistant Secretary Crowell

WASHINGTON, Jan. 14.—Although the War Department must await congressional legislation on more than \$1,500,000,000 worth of informal and technically incomplete contracts, the work of adjusting several billion dollars' worth of uncontested contracts is proceeding without delay. The department is anxious to take care of these contracts as speedily as possible, and regional boards are working out adjustments on the basis announced some time ago as the department's policy toward contractors whose work has been stopped by the armistice.

The War Department has also taken repeated occasion to announce that it will be particularly careful not to demoralize general market conditions by its disposition of supplies for which the Government has no need. Sales have so far not been large. Practically there has been no sale except to Government departments and in special commodities, such as wool and horses, for which there has been a big civilian demand. In the iron and steel industry, everything has been held back. Much of this has been due to the fact that the War Department is still busy with its Jan. 1 inventory. Until that has been completed, it will not know how great its actual surplus will be in any line.

In all sales, also, it is the plan of the Government to ask the advice of the industries immediately concerned. Where manufacturers desire, they will have the first opportunity to repurchase materials they have produced, so that the Government's holdings need not come upon the open market in competition with the original production.

The department officials hope to have their preliminary inventories completed by Jan. 15, and then to have the basis for further detailed plans. They will at least know something of the detail and the size of the surplus which must be distributed.

A special "sales" cabinet is gradually being formed to concentrate the disposition of Government property on a basis similar to the concentration of the "procurement" program worked out during the war.

This will be part of the office machinery of Director of Munitions Crowell, who has taken charge, by presidential direction, of the whole question of disposing of surplus materials. Brig.-Gen. C. C. Jamieson is in direct charge of the sales policy, but it will be formulated in co-operation with L. H. Hartman, chief of the Surplus Property Division of the department, and Max Thelen, assistant to General Goethals as chief of Procurement, Storage and Traffic. This will co-ordinate in one group all the sales divisions of the department and make possible machinery that will work in harmony with all industrial requirements.

#### How Shop Committees Work

WASHINGTON, Jan. 14.—To show just how shop committees may be made of the greatest possible use in working out efficient programs, the Working Condition Service of the Division of Labor Administration of the Department of Labor has published the minutes of two meetings of such a committee in a manufacturing plant that, of course, is unnamed. These minutes show an interesting comprehensiveness of subjects discussed and the methods by which these discussions have been made effective. They should be of particular interest to plants in which shop committees have been formed but in which there is difficulty in getting the shop committee to work out profitable suggestions or discussions.

The plant of the Savage Arms Corporation, at Sharon, Pa., is still in operation, turning out parts for automobiles. It is expected that this plant will be kept running in spite of the fact that other plants of this company at Utica, N. Y., and Philadelphia are closed.

# Labor Department Making Little Progress

Plan for Encouraging Public Work Not Being Received with Enthusiasm—Restlessness Increases as Unemployment Grows More Serious

WASHINGTON, Jan. 14.—Labor conditions throughout the country reveal a decided tendency toward strikes and unemployment. There would be less warrant for worry if the Government officials here were making any appreciable headway toward a constructive labor policy. But they are not.

Instead, they still hope that something will happen which will justify the Labor Department's attitude that war wages must be maintained throughout the reconstruction days and that all strikes should be settled by yielding to the demands of the men. The governmental machinery for strike settlements has revealed no success, and its employment service, which is working hard against the rising tide of unemployment, finds that it cannot even keep pace with the present rate of demobilization.

Almost the only hopeful sign on the horizon is the fact that the Government officials are beginning to let their worry get into their public utterances. Until recently, they had contented themselves with talking pleasantly and optimistically for fear of frightening somebody. Now they begin to realize that their optimism has merely served to induce labor leaders to increase their demands.

But there are signs that their new policy comes too late. The reports of restlessness throughout the country are growing, and the situation in the harbor strike in New York has added little of comfort to those who are watching the situation for signs of the radical tendencies that are being manifested in many industrial centers. To make matters worse, the Labor Department officials here are now discovering a disquieting growth of discontent within the labor unions themselves and the decrease in the influence of the more conservative labor leaders. Frank Morrison, secretary of the American Federation of Labor, is preparing a manifesto against the growth of Bolshevism in the labor unions, but President Samuel Gompers is again on his way to Europe and there is nothing to indicate that Mr. Morrison can accomplish much.

The Senate Committee on Education and Labor is continuing its hearings on the labor problem, but with little constructive result. It is, however, getting some pessimistic testimony and this has not been without effect in arousing Government officials to present perils.

## Increase in Surplus Labor

The Employment Service reports on labor conditions throughout the country reveal a decided growth in the surplus of labor. A week ago, only seven states showed such a surplus. Now the list has grown to twelve—California, Colorado, Illinois, Idaho, Indiana, Iowa, Missouri, Montana, Nebraska, North Dakota, Oregon and Utah. But the names of the states mean little. It is the tendency which these figures reveal that is most important. For the reports are highly fragmentary and far from complete. Further, they are far behind the existing situation, covering conditions now 10 days old.

For the beginning of last week, they showed a reduction of 2500 employees in Boston and a surplus of 1100 workers in Lynn and 2500 in Worcester, Mass. Bridgeport, Conn., showed 5000 more workers than jobs, and the plants there are reported to be laying off men at the rate of about 1000 weekly. New Britain shows a slight shortage of men, but there is a surplus of 2000 workers in Norwich and the plants are still laying off men instead of adding to their forces. New Haven has added 2000 more to her unemployed lists.

New York shows a further reduction of 10,000 in its payrolls, but this is not taking into account the harbor strike or the big influx of workless demobilized soldiers. Buffalo has a surplus of 12,000 workers,

Syracuse of 4000, Rochester 3000, Utica 2000 and Kingston 1500. New Jersey has been fairly stable and Pennsylvania is the only state reporting a continued demand in all lines. There is a continued shortage of laborers, coal miners, quarrymen and shipworkers, although the shortage of 20,000 reported in the previous week has fallen to 11,000. South Bethlehem and Allentown report layoffs.

The condition in Ohio is just the reverse. The Cleveland surplus of labor has increased to 20,000; Toledo has 10,000 more applicants than jobs; Dayton, 7000, and Cincinnati 2000. Akron alone reports a material shortage of workers.

Detroit still has a surplus of 20,000 workers, although there has been an increase in payrolls. Indiana, Illinois and Minnesota reveal smaller surpluses.

## Effect of Cold Weather

The great complication in the situation lies in the fact that the cold weather is driving men into the search for employment who had been less eager to find something to do. The demobilizing of the army had turned out thousands of soldiers who preferred a vacation before they hunted work. But now that jobs are getting scarcer, there is a speeding up in the demand for the places, both from the soldiers and the war workers who have lost their places because of the cancellation of contracts. The fact, however, that both demobilization and cancellation is now hitting a faster stride is having a marked effect on the labor situation.

To make up for this, the Department of Labor is increasing its efforts to arouse public interest in public construction work which it hopes will offer employment to thousands of unemployed. So far, however, there has been anything but a large response, due in a great measure to the difficulty in raising money for this purpose in many states and municipalities, and the hesitancy of public officials to undertake improvements at the present scale of costs. The latest appeal of this kind has been issued by F. T. Hawley, Director of the Industrial Plants Division, and Roger W. Babson, Director General of the Information and Education Service of the Department of Labor, and is addressed to "Employers and Government Committees." It follows:

Our country again calls upon you to assist her.

She needs your aid now as vitally as during the most critical period of the war. Then you laid your all upon her altar, with a free will and an open heart. Now she asks you to lend your voice and your energies to help our gallant boys returning home from foreign battlefields and those who have been mustered out of the service to resume their place in civil life.

The Department of Labor has drawn a plan for renewing public works and building operations where they were stopped in 1916 by reason of the war. You can enlist your services in aid of this plan:

First—By writing a letter to the proper public officials of your community urging them to start operations at once on all needed public works, such as erecting buildings, repairing buildings, paving, constructing sewers, renewing paving, building roads, etc.

Second—By asking all the workers in your establishment to write similar letters.

Third—By advocating the building plan everywhere and to everyone at all times.

If we all go into this work with vigor, we shall prove our love for the war heroes in peace as well as in war.

Our boys fought for our liberty. Now let us help to make a place for them when they come marching home. The building plan carried to success will do that. More than that, it will assure prosperity to all the people. We all want that.

We are sure that you will help without being urged because you have given proof of your love of country every time she has called upon you.

O. F. S.



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# THE IRON AGE

EDITORS:

A. I. FINDLEY

WILLIAM W. MACON

GEORGE SMART

CHARLES S. BAUR, Advertising Manager

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W. H. Taylor, President and Treasurer

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George H. Griffiths, Secretary

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## Iron Industry Capacities

From information presented in the annual review number of THE IRON AGE, published Jan. 2, close estimates can be made of the existing capacity for the production of by-product coke, pig iron, and steel ingots.

According to the lists published, the increase in by-product ovens in the United States makes the following record:

	Ovens, Number	Capacity Net tons
Completed Jan. 1, 1917 .....	6,756	22,479,400
Completed during 1917 .....	739	3,526,000
Completed on Jan. 1, 1918 .....	7,495	26,005,400
Completed during 1918 .....	2,085	9,205,800
Completed on Jan. 1, 1919 .....	9,580	35,211,200
Still building .....	1,620	7,590,000
Prospective total .....	11,200	42,801,200

The weekly reports of the Geological Survey during 1918 furnish accurate information of the performance to be expected from by-product ovens in actual experience. At the beginning of 1918, when the operators of by-product ovens were first being called upon to rate their plants and assign causes for the difference between rating and actual production reported, the weekly reports indicated an estimated total of almost precisely 500,000 tons weekly, which coincides exactly with the total of makers' ratings shown above. The outputs were much less. Apparently, however, the ratings were moderated later by reason of its being necessary to explain losses in production, whether due to labor trouble, plant repairs, lack of coal, lack of market or miscellaneous causes. One influence limiting capacity ratings was that they were required to be based upon the character of coal actually being received, not upon the coal the operator would like to use. At the close of the year the operators were rating their plants at about 650,000 tons a week, equal to 33,800,000 tons a year, or about 4 per cent less than makers' ratings.

A scrutiny of the causes assigned in the weekly reports during the year indicates that some loss of production is always to be expected, and production at 90 per cent of rating is about all that can be confidently counted upon. The actual production under moderately favorable conditions when plants now being built are completed may therefore be taken at 37,000,000 net tons a year, a figure that is as likely to be exceeded as fallen short of.

Since the latter part of 1916 the production of pig iron has fallen far short of the capacity of the furnaces nominally in blast, because of shortages of coke, labor and scrap of suitable character, and other influences, so that it is necessary to go back quite a while to find a time when the existing furnaces were producing normal tonnages. New blast furnaces completed since 1913 are as follows: 1914, none; 1915, 3; 1916, 4; 1917, 14; 1918, 8. The four furnaces of 1916 were blown in after May 1. In March and April of that year the production of coke and anthracite iron was at the rate of 39,280,000 gross tons a year. That was a very moderate, not an excessive, rate for the furnaces in existence. Up to nine months previously the average price of pig iron at furnace had been less than \$13. There was an average of 317 furnaces operated in the two months, while the number in existence—always excluding charcoal furnaces—was 392, showing 19 per cent of the stacks out of blast.

The 26 furnaces completed since that time can be conservatively rated at 180,000 tons a year, for that is only 500 tons daily for 360 days. Nearly all the stacks are expected to do more than 500 tons, and doubtless will, while time out for relining should not average more than two months in three years, and relining, moreover, is frequently done when furnaces are not called upon to operate. With an allowance of 350,000 tons of charcoal iron the total capacity of the country would seem to be 44,300,000 tons. With the argument that the 19 per cent furnaces out of blast in March and April, 1916, was too large a proportion for well regulated times, the blast furnace capacity of the country may be taken at fully 45,000,000 tons. There are seven furnaces projected or in course of erection, which would add about 1,260,000 tons.

As to steel ingot capacity, the new construction, in terms of rated capacity, has been as follows: 1916, 4,205,000 tons; 1917, 4,326,000 tons; 1918, 1,945,000 tons, a total of 10,476,000 tons. Actual production in 1916 was 41,400,000 tons, and throwing off 1,400,000 tons as the contribution of the new capacity completed in the year, largely in the second half, the capacity Jan. 1, 1916, may be taken at 40,000,000 tons. Deducting 15 per cent allowance from the rated capacities of the additions in the three years the actual capacity Jan. 1, 1919, would be 48,900,000 tons. Production of steel

castings has generally run over a million tons a year, so that the total capacity in steel ingots and castings may be taken as fully 50,000,000 tons. Perhaps the old equipment will perform better in the future than it did in 1916, and perhaps the new capacity will exceed 85 per cent of its nominal rating, but the restricted output in the past two years makes it undesirable to be otherwise than conservative.

Now as to the balance between pig iron and steel; a steel capacity rated in tons higher than the pig iron capacity is not out of line. The steel ingot "production" is merely the record of the ingot scales, by reason of the remelting of works scrap. The fact is that for any normal year in the recent past the production of finished rolled steel and steel castings has been approximately equal to the production of steel making iron. The production of rolled steel has been about 75 per cent of the ingot production, so that 49,000,000 tons of ingots would mean 36,750,000 tons of rolled steel, and 1,250,000 tons of castings would make the total 38,000,000 tons. Such an amount of pig iron could be provided, with 7,000,000 tons left for iron foundries and iron mills. The steady gain in past years of steel ingot production as compared with pig iron production has been due chiefly to the manufacture of steel increasing much more rapidly than the consumption of pig iron by iron foundries and iron mills.

If the blast furnaces make 45,000,000 tons of pig iron and require the same proportion of coke that they consumed in 1916, they will take 50,600,000 tons. In that year the blast furnace consumption of coke was 80 per cent of the total, so that with everything in proportion the country's coke production would be 63,250,000 tons. That would leave 26,000,000 tons to be supplied by beehive ovens, when their production in both 1907 and 1916 slightly exceeded 35,000,000 tons. When the blast furnace industry operates at less than its capacity the coke oven idleness will be chiefly of beehive ovens.

The Legion of Honor is the only order of knighthood in France which has stood the test of time. It was established by Napoleon Bonaparte in 1802 and he required that all admitted were to swear to co-operate so far as in them lay for the promotion of the principles of liberty and equality. All other orders were swept away during the French Revolution or later, but the one devoted to the principles of liberty and equality survived and for this reason it is eminently fitting for the French Government to admit to the honored membership a number of Americans, including steel manufacturers, who have rendered service of a very high order to the cause of liberty and equality during the great war. It was the privilege of Messrs. Schwab, Farrell and others who have been elected to membership in the Legion of Honor to render service of special value to France and they and a long list of other manufacturers rendered service of the highest character not only to France, but to their own country.

The announcement that forty-five manufacturers of farm wagons and trucks have agreed to adhere to certain standards in manufacturing a

limited number of varieties of their products shows that these manufacturers, at least, have learned something from the experience of the war. As E. W. McCullough, general manager of the National Implement and Vehicle Association, has pointed out, this step probably indicates the policy which will be followed by all manufacturers of lines of farm operating equipment because during the war the fact was established by the Conservation Division of the War Industries Board that former competitive conditions produced great waste and that the consumers paid the bill. Now as what Mr. McCullough calls "the light of common sense" has come in and all see the folly of excessive and unnecessary variety, it is thought that the manufacturers in other lines will join in this effort to make the elimination of waste permanent. If this is true in regard to farm implements, it should be equally true of many other manufactured products. In some directions there have been indications of return to old methods in vogue before the war, but continuation of such folly for an indefinite time seems almost beyond belief.

### Labor-Saving Machinery

Almost from time immemorial every important general advance in wage rates has been followed by a fresh movement in the direction of installing labor-saving machinery. The greatest wage advance in all time has occurred in the past three years and it would be strange indeed if the usual results should not follow. At the moment, however, one does not find that there is any great demand for labor-saving machinery. That, presumably, is because there is a general indisposition to enter into new engagements of any sort. When business really opens up, it is reasonable to expect that those who desire to invest money will be more disposed to invest it along lines that involve reduction in the cost of production rather than in the direction of increasing output.

Sellers of labor-saving machinery find prospective buyers disposed to object to high prices now asked in comparison with those quoted before the war. The rejoinder, of course, is that the value of the device is likewise increased. The value is to be measured not merely in terms of the wage rates paid for the services that are to be dispensed with. The proper comparison is with the labor performance secured for a dollar of pay. The testimony of most employers is that while wage rates have advanced, performance has decreased, per hour or per day, so that labor costs have advanced much more than wage rates. If wage rates have increased 100 per cent., the wage cost may have increased 150 per cent.

In the iron and steel industry, there has been an average advance in wage rates during the war of more than 100 per cent. While there are slight variations in rates, a fair comparison can be made by taking the former rate for common labor at 19 cents an hour and the present rate at 42 cents. In the case of 12-hour men, who formerly were paid for 12 hours' work and are now paid for 14 hours' work, on account of use of the "basic eight-hour day," the advance per day would be from



\$2.28 to \$5.88, or 158 per cent. If efficiency has gone down only 15 per cent., this means that the wage cost has tripled. The value of a labor-saving device is correspondingly increased.

The first movement toward introduction of additional labor-saving machinery, on account of increased wage costs, is not likely to be on the part of those who are already in the forefront, in their respective lines of manufacture, in this matter of using labor-saving machinery. Rather it will be by those who have not progressed as far as their best positioned competitors. With an established and stable basis of wages and performance, a point is likely to be reached where there is a balance between the use or non-use of labor-saving equipment, whereby one manufacturer pays more in interest and upkeep on investment while the competitor saves this, but pays the money out in extra wages. When the general wage rate increases, the latter is placed at a disadvantage and must invest in more labor-saving machinery or submit to having a higher total cost than his competitor better equipped with labor-saving machinery.

An advantage the manufacturer with the less labor-saving machinery has had is that when a period of idleness comes along he can dispense with his labor and save the amount whereas his competitor's labor-saving machinery still represents an investment, against which there are interest charges. If it costs one-half more to do the thing by hand than by machinery, and the industry is idle one year out of three, the two manufacturers are really on equal terms after all. The comparison is suggestive, though not exact because so many things must be assumed to make a comparison.

In the average industry, there is always less introduction of labor-saving machinery than manufacturers desire, because they lack adequate capital. At the present time, most manufacturers find themselves with accumulated earnings, and as there is little disposition to increase production, the tendency will be to make investments that will reduce production costs.

### Restoring Stolen Machinery

The language of diplomacy is not noted for its frankness and plain language, but rather for its circumlocution and it is positively refreshing to read this paragraph in the official communication issued Monday after the adjournment of the Supreme War Council of the Peace Congress in Paris:

The meeting reached an agreement as to the terms on which the armistice is to be renewed on Jan. 17. This included naval clauses, financial clauses, conditions of supply and provision for the restitution of material and machinery stolen from France and Belgium by the Germans.

The above statement is a plain declaration of the truth that material and machinery were stolen in France and Belgium by the Germans. The word stolen is the only word in the English language that could truthfully be used. The machinery was taken from countless plants, transferred to Germany and there placed in operation,

and France and Belgium are now under a tremendous handicap, not only because large parts of their countries were devastated, but also because the machinery taken to Germany will give the Germans a decided advantage if it is allowed to remain where it is. The word restitution is also a good one, for it means the act of restoring or returning that which has been taken away. The Germans have intimated that it would be impossible for them to identify much of the machinery that was stolen and the French have replied that, if this is true, they will be willing to use for a time, at least, some machinery made in Germany. Every dictate of justice demands that there must be restitution of this stolen property.

Theodore Roosevelt, in the last editorial which he wrote, said: "It is a serious misfortune that our people are not getting a clear idea of what is happening on the other side." If the members of the Supreme Council continue to use as plain language as that quoted in the above paragraph, they will do much to clarify the situation and give the people of this country confidence that a just peace is to be established.

### Shop School as Trouble Remover

What the shop school has done for women it can do for men. Something of this sort has already been accomplished here and there, but there is much to do. There is no good reason why the newcomer to any industrial plant should have his mind considered less than his body. It has happened that a wise provision for lockers, or for ventilation, or for heating, has worked well toward elevating the shop spirit, but at the same time the reputation of the employer has suffered from the poison of malicious tongues. The threshold or vestibule school may be used to inform the new employee correctly and to do so without the loss of time that goes with that instruction when imparted by a neighboring workman. The danger from misleading information and the difficulty of checking error are great. A lie travels fast and far. Misstatements can be unintentional, and often no opportunities present themselves to make corrections.

A Hartford company not only uses the vestibule school for the usual technical instruction of its employees but sees to it that one of the very first things taught is what in too many shops filters wastefully from unofficial and irresponsible sources. In the building of a high-grade product there are ideals established, standards set and processes conducted with zealous skill and a devoted enterprise. In this adventure everyone has a part, no matter their place or prominence. Upon the success of their joint labors is determined the upbuilding of that product. Otherwise their lack of sympathetic understanding is reflected in the output. There is every reason that everybody be told all that should be known of the general objective.

So well has this thought been carried into effect at the plant mentioned that practically all operations are carefully laid down step by step and reduced to writing on cards. These are freely used as reminders, so that even the well-informed have

constantly before them a list of the several things in regular order that they are expected to do in their work.

The new workman too often feels himself a misfit. The whereabouts of things are unknown. Verbal instructions are not always accurately given or fully heard. At that, they are soon forgotten. In regaining the missing data, the time is lost of everybody involved. One particularly good feature of the shop school has been to give the new employee an easy familiarity with every detail of any job undertaken and an absolute independence of all assistance. There is a wonderful confidence when the person, stranger though he or she be to the department, is familiar with the work and knows how to do it in record time. That alone gives a gratification that none appreciate more than does a highly-skilled workman. One so fortunate in training can do much as an example, and the matter of preliminary instruction is all the more to be emphasized on that account.

Some peace-period orders have already come from France; for raw material, for machinery, for tools, etc. These are sufficiently substantial in themselves to forecast a larger flow of business once the internal affairs of the nations abroad settle down into normal lines of activity. A significant incident is the condition surrounding an order received by a Connecticut manufacturer of machine tools from a plant at the frontier longest under the German heel. The order covered a fresh outfit of the American product. The Belgian was perplexed but had no misgivings. Said he:

I don't know how I am going to get them here. At present I am not sure that they can come by way of Antwerp. It's not clear that they can come through France. But please go ahead on them, and by the time you have them ready for me I shall be able to send you the shipping instructions.

There is encouragement, to say the least, in the picture of the Belgian engineer who, amid the ruins of his plant and knowing not how relief will come, is nevertheless going confidently forward in the full assurance that in due season all will be well.

#### Philadelphia Branch for Walworth Manufacturing Co.

The Walworth Mfg. Co., with general offices at Boston, and works at Boston and Kewanee, Ill., and branches in New York, Chicago and Seattle, has recently purchased the business of the Hunter & Dickson Co. at 241-247 Arch Street, Philadelphia, and will operate it as one of its branches. The Hunter & Dickson Co. was founded in 1881. The business began in one room and basement, about 25 x 25 ft., at the present location. The sales were about \$50,000 the first year and the business steadily progressed until of late years it has amounted to several million annually.

The Walworth company can be called the pioneer in this country in the steam supply line. The purchase of the Kewanee Works of the National Tube Co. in 1917 by the Walworth Mfg. Co. greatly increased its production of valves and fittings for steam, water and gas work.

The Inland Steel Co., Chicago, has installed the Orth regenerator in its No. 3 open-hearth furnace, using tar fuel.

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#### Prices of Malleable Castings Are Irregular

The American Malleable Castings Association moved its headquarters in Cleveland during the past week and now occupies a suite of rooms in the Euclid Building, 1900 Euclid Avenue. This association, which has been holding monthly meetings in Chicago, has divided its membership into Eastern and Western sections and members in the Eastern section will hold a monthly meeting in New York the third Wednesday of each month. The first meeting was held this week at the Waldorf-Astoria, which will probably be the regular meeting place. The purpose of dividing the organization in two sections with separate meeting places is merely for the convenience of the members. It is not the intention to draw a definite geographical dividing line between the two sections, but members in the territory east of Cleveland will be regarded as coming in the territory of the Eastern section. The meetings in Chicago will be held the second Wednesday in each month as heretofore.

Malleable iron foundries report that a good volume of inquiries are coming out for castings, largely from the motor truck and tractor field. Following the cancellation of Government work which has left the foundries with a small volume of orders on hand, there has been a great deal of competition for business and prices are irregular. Most of the foundries have made concessions on the price of castings, corresponding to the \$3 per ton reduction in pig iron prices, but some of the foundries are going further than this in price cutting. Eastern malleable foundries are holding up prices better than those in the Central West.



# War Contracts Commission Proposed

Latest Plan for Solving Problem of Readjustment—Special Session of Congress May Be Called—Great Supply of Materials to Be Sold

WASHINGTON, Jan. 14.—After changing its mind three times, the Senate Committee on Military Affairs is now about to work out its fourth attempt to solve the problem of contract readjustments by agreeing upon a substitute for the Dent bill passed by the House of Representatives. The latest measure worked out by the members of the Senate committee is to provide for a special War Contracts Appeal Commission which is to have final jurisdiction over contract adjustments made by the Secretary of War but over which there may be further controversy.

The Dent bill was finally accepted by the House after the majority leader, James R. Mann, indorsed it, and thus aligned the minority with the majority. The House added some amendments, the most important of which was to make it cover contracts with foreign governments as well as domestic agreements. It now embraces the legalization of about 6600 contracts, and involves approximately \$2,700,000,000. But it leaves the final settlement exclusively in the hands of the Secretary of War.

Ten days ago the Senate Military Affairs Committee rejected the Dent bill unanimously because it gave too much power to the Secretary of War. It indorsed, instead, the Hitchcock measure putting all this power in the hands of a special commission. This started an energetic campaign on the part of Secretary Baker and Assistant Secretary Crowell, who succeeded in convincing the committee last Tuesday that it was all wrong, and that the Dent bill ought to be accepted. The committee agreed, and a couple of days later decided that the Dent bill needed a lot of amendments. Yesterday the Dent bill came over from the House and was sent to the Military Affairs Committee. Then the latter decided that the Dent bill could not be used, and worked out a new substitute providing for the appeals commission. Next it was discovered that the new substitute bill which had been brought to Washington by representatives of the Chamber of Commerce of the United States made no provision for the adjustment of formal contracts but only the informal contracts which it sought to validate. So another session of the committee was necessary to-day to attempt to make the final draft watertight and comprehensive.

The program now is to have the Senate press the committee's final bill to a hurried adoption and then to iron out the difficulties in conference. The measure provides for the appointment by the President of a special commission of three members—one from the Department of War, one from the Department of Justice, and one to represent the general business interests of the country. They are to receive \$10,000 a year each, and are to have jurisdiction over contract adjustments upon appeal either by the contractor or by the Department of Justice, if the latter believes that the Government interests have not been properly conserved. No provision is made for a Government appeal from the commission's award, but the contractor may accept 75 per cent of the commission's award in cash and prosecute an appeal for the modification of the remainder to the Court of Claims.

## May Have Special Session

The other item of legislation which is worrying business men generally is the War Revenue bill, which is making slow progress in conference. As a corollary to both there is still the question of the possibility of an extra session. A month ago the minority leaders seemed disinclined to force a special session. But that attitude is changing and the fact that Congress is far behind on all legislation, particularly revenue and appropriation legislation, makes it seem daily more likely that a special session will be necessary.

Another fact that must be considered is the absolute failure of Congress, or even of the administration, to attempt anything in the line of reconstruction legislation. The railroad problem is away up in the air, and the general difficulty of the labor situation, which is daily becoming more brittle, has received no response either from Congress or the Executive. This, coupled with the general chaos of the foreign situation, is making members of Congress a little more anxious to be on hand throughout the spring and summer. Even a small minority could force an extra session by blocking the more important appropriation bills, so that there is a decided temptation to the members who want to remain within striking distance of Washington instead of waiting until the regular session would ordinarily convene in December.

## Sales of Materials

While waiting for congressional action on the contract situation the War Department is making slow progress on the question of sales of surplus materials. C. W. Hare, the assistant director of munitions, has taken the place of Brig. Gen. C. C. Jamieson in charge of the general sales policy, but has made no further announcement concerning his program.

The Army Ordnance Department, however, has given out the following important statement concerning the procedure which it has adopted for the disposition of ordnance scrap material:

All surplus, unused, or obsolete construction and manufacturing materials, semi-finished and completed parts, miscellaneous supplies, etc., left over at time of cancellation or termination of ordnance contracts, or surplus at arsenals and supply depots will be ordered sold or stored as conditions require, by the subcommittee on sale of material of the Salvage Board. The actual sale of this material will be handled by the material branch of the Stores and Scrap Section of the Ordnance Department, through the district stores and scrap managers located in each district ordnance office.

Capt. Ralph C. Shaw, chief, Material Branch, located in group B, section 1, room 303, of the Ordnance building at Seventh and B streets, Washington, is compiling lists of the materials to be disposed of as promptly as these materials are reported for sale. Likewise, he is compiling lists of buyers of given classifications of materials. This information is being imparted to the district managers. Any Government agencies or others interested in the purchase of any materials having been or to be ordered sold by the Salvage Board should communicate with the Material Branch.

All scrap left over from the operation of ordnance contracts will be sold by the scrap branch of the Stores and Scrap Section, operating through the stores and scrap managers of the district ordnance offices. This scrap consists of different kinds of steel in sheets, billets and turnings, scrap steel parts, supranickel scrap, antimonial, lead dross, silk and cotton waste, burlap, spent acids, etc.

District representatives of the Stores and Scrap Section can give information as to scrap available. Likewise, Lieut. Schleck, chief, scrap branch, group B, section 1, room 305, will be glad to advise as to amount of scrap on hand at any point, price at which it is being held, etc. Likewise, he will be glad to receive names of Government agencies or other possible buyers of these materials.

Some idea of the enormous stocks of steel, machinery and engineering materials on hand in the War Department, but not in the possession of troops, is given in a special report made by the Statistical Division to Brig. Gen. R. E. Wood, acting quartermaster general and director of purchase and storage. This report covers stock at depots, camps and ports, and in transit to depots, camps and ports, as of Dec. 1, 1918. The statement follows:

STEEL PRODUCTS—Beams, 1166 tons; sheets, corrugated, 280,263 sheets; barge wire, 13,664 tons; plain wire,

736 tons; angle posts, 238,897; screw posts, 1592 tons; steel shelters, 3002; wire netting, 378 tons; steel tanks, water, gas, 1468 tons; steel plates, 245 tons; steel rope, hydrants, etc., 546 tons; miscellaneous, 6999 tons.

**MACHINERY**—Hoisting engines, 143; engines, 233; locomotive cranes, 58; steam shovels, 33; boilers, 276; concrete mixers, 166; derricks, 29; road rollers, 68; saw mills, 66; gantry cranes, 3601 tons; general machinery, miscellaneous, 6488 tons; shapers, 722 tons.

**TRACK MATERIAL AND FASTENINGS**—Rails, 42,855 tons; spikes, 3539 tons; bolts, 1875 tons; angle and splice bars, 1908 tons; turnouts and switches, 4374 tons; miscellaneous track material, 2378 tons.

**PIPE AND FITTINGS**—9444 tons.

**LOCOMOTIVES**, standard gage—Set up, complete, 139 knocked down, complete, 135; knocked down, incomplete, 5; spare parts, 100 tons.

**LOCOMOTIVES**, narrow gage—60 C. M. steam, 31; 60 C. M. 50 h.p., 1; 36-in. gage steam, 1.

**CARS**, standard gage—Box, complete, 858; high gondola, complete, 200; low gondola, complete, 500; flat artillery, complete, 12; tank, complete, 87; dump, complete, 2; ballast, complete, 152; refrigerator, complete, 350; box, incomplete, 100; high gondola, incomplete, 17; tank, incomplete, 18; refrigerator, 250.

**CARS**, narrow gage—Box, complete, 65; dump, 196; artillery trucks, complete, 100.

**MISCELLANEOUS**—Engineer supplies, 1771 tons; paint, oils, turpentine and painter supplies, 942 tons; electrical material, 772 tons; roofing paper and felt, 69,138 rolls; wall board, 638 tons; copper wire, 1030 tons; carbide, 1014 tons; floating derrick, 77 tons.

**WAGON TRANSPORTATION**—Limber and caisson, 210; dump, 155; tool spring, 179; chess, 590; ponton, 449; brown type, 89; escort, 45; autos, trucks, trailers, tractors, 6; explosives, 984 tons; lumber, 11,785,284 feet.

The War Department also has given out the following interesting figures of the comparative total production of machine guns, rifles and ammunition made in the United States, Great Britain and France between April 6, 1917, and Nov. 11, 1918:

*Total Production April 6, 1917, to Nov. 11, 1918*

Machine Guns and Machine Rifles:	
Great Britain .....	181,404
France .....	229,238
United States .....	181,662
Rifles:	
Great Britain .....	1,971,764
France .....	1,416,056
United States .....	2,506,742
Rifle and Machine Gun Ammunition:	
Great Britain .....	3,486,127,000
France .....	2,983,675,000
United States .....	2,879,148,000

The sharp ascendancy in American production, however, is revealed by the following table of the average monthly rate of production in July, August and September, 1918, when our industries reached their highest speed:

*Average Monthly Rate, July, August and September, 1918*

Machine Guns and Machine Rifles:	
Great Britain .....	10,947
France .....	12,126
United States .....	27,270
Rifles:	
Great Britain .....	112,821
France .....	40,522
United States .....	233,562
Rifle and Machine Gun Ammunition:	
Great Britain .....	259,769,000
France .....	139,845,000
United States .....	277,894,000

A meeting of the standardization committee of the American Gear Manufacturers' Association was held at the Hotel Statler, Buffalo, Jan. 13 and 14. One of the main objects of the organization of this association is to standardize size of gears, and this committee has this work in charge.

The Crucible Steel Co. of America shut down its Atha works at Harrison, N. J., last Saturday on account of cancellation of Government contracts, but will resume operations gradually on its regular line of special steels and tool steel. The Atha works during the war was largely engaged in making gun forgings.

## TO SERVE INDUSTRIES

### Plan for Co-operation Is Announced by Department of Commerce

WASHINGTON, Jan. 14.—The Department of Commerce has announced the organization of the Industrial Co-operation Service to continue the work done during the war by the Conservation Division of the War Industries Board. The work of this division is to be entirely voluntary so far as the industries are concerned and without any element of compulsion. The same is true of the Waste Reclamation Service of the department which has taken over the War Prison Labor and Waste Reclamation Service of the Labor Division of the War Industries Board. Both of these organizations will be housed temporarily in the building heretofore occupied by the War Industries Board and the Council of National Defense.

The most important feature of the new Industrial Co-operation Service is the list of "unofficial commercial advisers" who are to participate in its operations. Most of these men were members of the War Industries Board or heads of divisions. The list, with the industries represented by each, follows:

W. B. Dickson, steel; Samuel P. Bush, forgings; George N. Peek, agricultural implements; Pope Yeatman, non-ferrous metals; A. W. Shaw, former chairman Conservation Division, War Industries Board; Edwin B. Parker, former priorities commissioner, War Industries Board; George R. James, former chief, cotton and cotton linters, secretary, War Industries Board; Thomas E. Donnelly, pulp and paper; James Inglis, cotton baling and transportation; Charles H. MacDowell, chemicals; Thomas C. Powell, railroad transportation; William M. Ritter, lumber; Walter Robbins, electricity; John W. Scott, textiles, and C. F. C. Stout, hides and leather.

Representatives of other industries have been asked to participate.

Former Chairman Shaw of the Conservation Division of the War Industries Board is supervising the transfer of the work of that division to the new organization, of which John Cutter is the acting chief. Hugh Frayne, former chairman of the Labor Division of the War Industries Board, is similarly supervising the reorganization of the Waste Reclamation Service.

"It is the purpose of the Department of Commerce," says the official announcement, "through both of these important services to keep in close touch with the industries and under its organic law, which calls upon it to foster, promote and develop the industries of the country, to assist them in every practicable way. The services now created from the activities of the War Industries Board will permit greatly enlarged usefulness to the commerce of the country.

"The Bureau of Foreign and Domestic Commerce has long actively promoted the interests of our commerce abroad; the Bureau of Standards is affording, with greatly extended facilities created during the war, that scientific support to all industries which has been the basis upon which Germany so successfully built her commerce before the war. The Industrial Co-operation Service dealing with problems of commercial standardization, of the saving of industrial wastes, of greater effectiveness in production and sale, in the removal of hurtful and uneconomical trade practices, will substantially complete the cycle of helpfulness and with the Waste Reclamation Service will form a rounded whole of aid to commerce, especially needed in the present days of readjustment and in the future days of competition to follow."

Europe has the same problems of turning its war machinery into the machinery of peace. The French Government has decided to convert its Munitions Department—also known as the Armament Department—into a Department of Industrial Reconstitution. On this subject a special report sent by Commercial Attache Pierce C. Williams at Paris says that M. Loucheur, who has been the Minister of Armament, will retain the directorship of the new department.



# Iron and Steel Markets

## A FEATURELESS WEEK

### Operations on Slightly Larger Scale But Surplus of Labor Developing

#### Foundry Products Lower and Scrap Softer—British Ferromanganese to Be Admitted

An incomplete analysis indicates that the aggregate of peace-time buying is larger than generally supposed. No attempt is made to express it in figures, but in spite of good shipments in December the bookings on Jan. 1 were probably less than 10 per cent below those of Dec. 1. Mills have meanwhile worked into the backlog which is usually so desirable for an efficient operating regime. Generally the producer describes conditions as better than expected. The trade has been so long used to full steam activity that it is not yet accustomed to the present period of low demand.

With operations not quite so good as a week ago, it is to be expected that reports are numerous of plant shutdowns. The industry cannot, of course, expect 60 per cent operation and not have idleness. A surplus of labor has already become apparent at steel works, with offers to work at lower than existing wage schedules.

The December estimated output of steel ingots, 2,992,306 tons, is, with the same number of working days, only 2 per cent less than the November production and there was no noticeable stocking of the rolled product, a fact which is favorable.

Concentration on export probabilities still serve to accentuate the unfavorable differences in ocean freight charges as between this country and England. American billets have been quoted at \$50 per ton, f.a.s., while the British established export price is £13 10s. Thus the vessel freight rate difference needs to be within \$14 per ton for the United States to participate. American steel bars have been offered at about \$72.50 alongside ship, or about \$20 per ton lower than the British product. Through reductions in ocean freights recently made on American ships the handicap has been lessened, but on shipments to the Far East charges from New York are roughly three to three and one-half times those from Liverpool.

Inquiries of a promising nature are appearing from Belgium, though likely for British negotiation. Fresh export inquiries here include 3000 tons of light rails and 1500 tons of ties for portable tracks, and one of 500 tons of standard rails for Spain.

Another step in the abolition of the zoning system of making pig iron prices has been taken by some of the Virginia furnaces, which have started to quote at their furnaces instead of on the Birmingham basis. The outlook is that the last vestige of the plan adopted Oct. 1 will soon disappear, if competition becomes severe. The makers of charcoal iron still hold out against reducing prices. On other grades, the \$3 reduction is general as to new business.

The drop in prices has been accepted in spots

in the foundry trade, as instanced by a 25 per cent cut by radiator makers and some recessions in malleable casting prices. Guidance in respect to prices on old contracts is expected from a meeting of pig iron producers in Pittsburgh on Jan. 15.

The scrap market is very weak, with prices tending downward, but dealers believe the bottom is about reached. The large quantity of war scrap which must eventually reach the markets must be considered in predicting the future course of the market.

Late returns of iron and steel tonnage exports, 448,716 gross tons for November, 1918, show a decrease of only 5 per cent from November, 1917, but 15 per cent more than October, 1918. Barbed wire, required for the fighting front, dropped from 29,311 tons in October to 23,190 tons in November. In steel plates the month's outgo was 56,846 gross tons, or 3879 tons less than in October.

From 25,000 to 27,000 tons of British standard 80 per cent ferromanganese, which was sold prior to the entrance of the United States into the war, may now be imported, most of it at \$164 to \$185 per ton, seaboard. The present asking price for domestic 70 per cent alloy is \$225, delivered.

The re-establishment of the Chicago basing for finished steel is again being agitated. Although it existed by Presidential proclamation for the nine months ended July 1, 1918, producers generally fought against recognizing it on private purchases and now that the Government is not the heavy buyer and mill outputs are not allocated, they may be expected again to resist the change.

## Pittsburgh

PITTSBURGH, Jan. 14—(By Wire).

In a little over a month the labor situation has reversed itself, and at present there seems to be a larger supply of labor than can find steady work. The other day at a Valley blast furnace there were close to 75 laborers, who had lost positions, seeking employment at other works. At a northside manufacturing plant last week a number of men applied for work and agreed to work for \$3 a day for ordinary labor, but were turned away, as the plant had all the men it could use. These are straws which show very conclusively that the supply of labor is now more than ample for all needs. If this goes on, and it no doubt will, it may reach the point shortly where labor will agree to work for much lower than present rates rather than remain idle. At Youngstown this week there are more men walking the streets with nothing to do than in two years. Several of the large steel plants there are down to about a 50 per cent basis, and have simply told their men there will be no work for them till more orders are received that will warrant starting up these idle plants.

The Carnegie Steel Co. has mapped out a large relining campaign for its blast furnaces, and it is understood this company expects to have four or five blast furnaces out right along for relining. For two years or more blast furnaces have been driven at a very high rate, and owing to the abnormal demand for pig iron many stacks have been nursed along and kept in blast that under ordinary conditions would have gone out months ago. There has been a let-up in operations of tin plate mills, most of which are not working over 11

## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics  
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Jan. 14, 1919	Jan. 7, 1919	Dec. 17, 1918	Jan. 16, 1918
No. 2, Philadelphia....	\$36.15	\$36.15	\$39.15	\$34.25
No. 2, Valley furnace....	31.00	31.00	34.00	33.00
No. 2, Southern, Cin'ti....	34.60	34.60	37.60	35.90
No. 2, Birmingham, Ala....	31.00	31.00	34.00	33.00
No. 2, furnace, Chicago*....	31.00	31.00	34.00	33.00
Basic, del'd, eastern Pa....	33.90	33.90	36.90	33.75
Basic, Valley furnace....	30.00	30.00	33.00	33.00
Bessemer, Pittsburgh....	33.60	33.60	36.60	37.25
Malleable, Chicago*....	31.50	31.50	34.50	33.50
Malleable, Valley....	31.50	31.50	34.50	33.50
Gray forge, Pittsburgh....	31.40	31.40	34.40	32.75
L. S. charcoal, Chicago....	38.85	38.85	38.85	37.50

### Rails, Billets, etc.,

Per Gross Ton:	Jan. 14, 1919	Jan. 7, 1919	Dec. 17, 1918	Jan. 16, 1918
Best rails, heavy, at mill...	55.00	55.00	55.00	55.00
O-h rails, heavy, at mill...	57.00	57.00	57.00	57.00
Best billets, Pittsburgh....	43.50	43.50	43.50	47.50
O-h billets, Pittsburgh....	43.50	43.50	43.50	47.50
O-h sheet bars, Pittsburgh....	47.00	47.00	47.00	51.00
Forging billets, base, P'gh...	56.00	56.00	60.00	60.00
O-h billets, Phila....	47.30	47.30	51.30	50.50
Wire rods, Pittsburgh....	57.00	57.00	57.00	57.00

### Finished Iron and Steel, Per Lb. to Large Buyers:

	Cents	Cents	Cents	Cents
Common iron bars, Phila...	3.145	3.145	3.745	3.685
Common iron bars, P'gh...	2.90	2.90	3.50	3.50
Common iron bars, Chicago...	3.17	3.17	3.50	3.50
Steel bars, Pittsburgh....	2.70	2.70	2.70	2.90
Steel bars, New York....	2.97	2.97	2.97	3.095
Tank plates, Pittsburgh....	3.00	3.00	3.00	3.25
Tank plates, New York....	3.27	3.27	3.27	3.445
Beams, etc., Pittsburgh....	2.80	2.80	2.80	3.00
Beams, etc., New York....	3.07	3.07	3.07	3.195
Skelp, grooved steel, P'gh...	2.70	2.70	2.70	2.90
Skelp, sheared steel, P'gh...	3.00	3.00	3.00	3.25
Steel hoops, Pittsburgh....	3.30	3.30	3.30	3.50

\*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Sheets, Nails and Wire,	Jan. 14, 1919	Jan. 7, 1919	Dec. 17, 1918	Jan. 16, 1918
Per Lb. to Large Buyers: Cents	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh...	4.70	4.70	4.70	5.00
Sheets, galv., No. 28, P'gh...	6.05	6.05	6.05	6.25
Wire nails, Pittsburgh....	3.50	3.50	3.50	3.50
Cut nails, Pittsburgh....	5.00	5.00	5.00	4.00
Fence wire, base, P'gh....	3.25	3.25	3.25	3.25
Barbed wire, galv., P'gh....	4.35	4.35	4.35	4.35

### Old Material,

Per Gross Ton:	Jan. 14, 1919	Jan. 7, 1919	Dec. 17, 1918	Jan. 16, 1918
Carwheels, Chicago....	26.00	26.00	27.00	30.00
Carwheels, Philadelphia...	25.00	25.00	29.00	30.00
Heavy steel scrap, P'gh...	20.00	20.00	25.00	30.00
Heavy steel scrap, Phila...	18.00	18.00	25.00	30.00
Heavy steel scrap, Ch'go...	16.50	18.00	23.00	30.00
No. 1 cast, Pittsburgh....	25.00	25.00	27.00	30.00
No. 1 cast, Philadelphia...	24.00	24.00	29.00	30.00
No. 1 cast, Ch'go (net ton)...	22.00	24.00	26.00	26.00
No. 1 RR. wrot, Phila....	23.00	25.00	32.00	35.00
No. 1 RR. wrot, Ch'go (net)...	18.50	21.50	25.00	31.25

### Coke, Connellsville,

Per Net Ton at Oven:	Jan. 14, 1919	Jan. 7, 1919	Dec. 17, 1918	Jan. 16, 1918
Furnace coke, prompt....	\$6.00	\$6.00	\$6.00	\$6.00
Furnace coke, future....	6.00	6.00	6.00	6.00
Foundry coke, prompt....	7.00	7.00	7.00	7.00
Foundry coke, future....	7.00	7.00	7.00	7.00

### Metals,

Per Lb. to Large Buyers: Cents	Cents	Cents	Cents	Cents
Lake copper, New York...	20.50	21.00	26.00	23.50
Electrolytic copper, N. Y....	20.50	21.00	26.00	23.50
Spelter, St. Louis....	7.25	7.50	8.15	7.75
Spelter, New York....	7.60	7.85	8.50	8.00
Lead, St. Louis....	5.50	5.45	6.40	6.85
Lead, New York....	5.75	5.75	6.75	7.00
Tin, New York....	71.50	71.50	72.00	85.00
Antimony (Asiatic), N. Y....	7.75	7.62½	8.00	14.00
Tin plate, 100-lb. box, P'gh...	\$7.35	\$7.35	\$7.35	\$7.75

or 12 turns per week, instead of the 16 turns, when the demand for tinplate was so heavy.

The recent advance of 7½ per cent in wages of sheet mill labor for January and February in mills that have signed the Amalgamated scale, was a surprise to the trade, which expected a reduction of wages, in view of the lower prices on sheets. The advance is explained by the fact that wages for January and February are based on average prices on shipments of sheets in November and December, and that average price was higher than it will be for January and February.

The demand for finished steel products in the past week has shown some betterment, notably in sheets and tinplate, but on most lines is still quiet and confined to actual needs. Jobbers' stocks on nearly all kinds of finished steel are fairly heavy, and they are placing orders only for such quantities of material as are needed to make their stocks complete. The opinion in the trade is that present quiet conditions are likely to last over the next three or four months, but with the return of favorable weather, allowing outside operations again, a material increase in demand for steel is expected. Mills point to present very high costs and say that on most lines of finished steel very much lower prices than are ruling now need not be expected. With the cost of about \$30 per ton to most merchant furnaces for making basic and foundry iron, if prices should go lower, it will mean a good many furnaces will have to stop. It is said that in the wire trade present prices do not allow any profit on wire and wire nails, owing to the very high cost of labor and material. Unless demand soon improves there is bound to be a further slowing down of operations among blast furnaces, steel works and finishing mills and if there is any material decline in price some companies state they will simply close down until labor and other costs come down to a point that will allow them to compete. The outlook is for a quiet condition in the steel trade at least until April.

**Pig Iron.**—Press reports of an active foreign inquiry for pig iron are not verified and are believed to be incorrect. Local pig iron interests state they have not received any foreign inquiry for pig iron of any moment since the armistice was signed. They point out that the fact that some of the foreign countries that have bought pig iron in this country before the war will be engaged over the next six months or a year in rehabilitating their cities and providing the necessities of life for their people. The work of active reconstruction in these countries is not likely to start for a considerable time. The local pig iron market is quiet in demand, the only active inquiry out being from the Colonial Steel Co., which is figuring on the purchase of 3,000 to 5,000 tons of basic for delivery in first half. If this iron is placed it is likely to be taken at a lower price than \$30 per ton, the recognized price at Valley furnace. There is a little inquiry for foundry iron and we note sales of 1,000 to 1,200 tons in small lots at \$31, Valley furnace. More blast furnaces in the Pittsburgh, Mahoning and Shenango valleys are now idle for relining and repairs than at any time for two years. Owners of blast furnaces are taking advantage of the present dull demand to put their stacks out and have them in good shape for long runs when the demand for pig iron is heavier than it is now. Some Valley furnaces report they are pretty well sold up over first half, and their customers are taking the iron out at a satisfactory rate. No large buying movement in pig iron is looked for till the demand for finished steel is materially better.

Basic pig iron, \$30; Bessemer, \$32.20; gray forge, \$30; No. 2 foundry, \$31; No. 3 foundry, \$30.50, and malleable \$31.50, all per gross ton at Valley furnace, the freight rate for delivery in the Cleveland and Pittsburgh district being \$1.40 per ton.

**Ferroalloys.**—Very little is being done in the local market in the way of sales of ferroalloys, consumers being covered through first half of this year, and in



some cases are offering various kinds of ferroalloys for resale. One Youngstown interest was offering in this market last week a considerable quantity of ferrosilicon for resale, but without finding a buyer. Consumers believe that prices on ferroalloys may be lower, and they are content to work their stocks off before placing any new orders. The outlook is that the supply of ferromanganese and other alloys will be amply large to meet all needs.

We quote 70 per cent ferromanganese at \$225, delivered, and 16 to 18 per cent spiegeleisen, \$65, f.o.b. furnace, an addition or deduction of \$3.50 per unit being made, when the manganese content is above or below the standard. Fifty per cent ferrosilicon is quoted at \$125.

We quote 9 per cent Bessemer ferrosilicon at \$52; 10 per cent, \$54; 11 per cent, \$57.30; 12 per cent, \$60.60. We quote 6 per cent silvery iron, \$39; 7 per cent, \$40; 8 per cent, \$42.50; 9 per cent, \$44.50; 10 per cent, \$47. Three dollars per gross ton advance for each 1 per cent silicon for 11 per cent and over. All the above prices are f.o.b. maker's furnace, Jackson or New Straitsville, Ohio, these furnaces having a uniform freight rate of \$2.20 per gross ton, for delivery in the Pittsburgh district.

**Billets and Sheet Bars.**—The inquiry for billets and sheet bars is quiet and consumption of steel by the sheet and tin plate mills is less now than at any time in the past two years. This week the Bessemer plant and Brown-Bonnell finishing mills of Republic Iron & Steel Co. at Youngstown are down for lack of orders. Other steel plants in the Youngstown, Wheeling and Pittsburgh districts are operating to only about 60 per cent. The Government is offering a good deal of steel for resale in the forms of shell steel, bars and forgings, which no doubt could be bought at prices a good deal lower than the recognized market on billets and sheet bars. Consumers are holding shipments of billets and sheet bars to some extent, as their slower rate of operation does not allow them to take in the full quantity named in their contracts.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at \$43.50, sheet bars \$47, slabs \$46, and forging billets \$56 base, all f.o.b. at mill, Pittsburgh or Youngstown.

**Structural Material.**—Some new work came out in the past week, but the outlook for the next three or four months is not very bright. It is understood that the new terminal and Union Station at Cleveland has been authorized by the authorities in that city, and it is estimated this work will require ultimately about 50,000 tons. Bids went in last week on a section of the New York Elevated System for 16,000 tons, but the award has not yet been made. The American Bridge Co. is understood to have taken 23,000 tons for the new armor plate plant near Charleston, W. Va., and the McClintic-Marshall Co. has taken 400 tons of bridge work in Havana, Cuba. The Pennsylvania Railroad has inquiries out for about 900 tons of steel for signal bridges, turntables and other repair work. Railroads are buying only such quantities of structural steel as are actually needed. It is understood that most fabricating shops are not operating to more than about 60 per cent of capacity, and a few are running at a less rate.

We quote beams and channels up to 15 in. at 2.80c. at mill, Pittsburgh.

**Plates.**—If the determination of the Government to carry out its shipbuilding program goes through plate mills expect to have a heavy business for a long time. At present little new work is being placed and the steel car shops are getting slack. It is believed that in a short time large contracts will come from the Government for plates for its shipbuilding program, but this is not certain. It is said that nearly all contracts for plates made last year on which shipments are still due consumers have been readjusted by the mills to the basis of present prices.

We quote sheared plates at 3c., Pittsburgh mill.

**Iron and Steel Bars.**—The fact that Western makers of bar iron have fixed their price on the basis of 2.90c., Pittsburgh, plus the freight to Chicago, has unsettled the local market to some extent. Demand for both iron and steel bars is quiet, and some of the mills are getting very short of work. The demand for reinforcing bars for concrete work has been very dull for some time.

We quote soft steel bars rolled from billets at 2.70c.; from old steel rails, 2.80c.; common iron bars, 2.90c.; bar

iron rolled from selected scrap, 3.65c.; and refined iron bars at 4.40c. at mill, Pittsburgh.

**Sheets.**—A leading interest in the sheet trade reports it has live orders on its books for enough tonnage to take its output over the next two months or longer, and some of the other mills report a similar condition. The rate of operation among sheet mills is now running from 70 to 80 per cent, the lower figure probably being very close to the average. Jobbers are buying a little more freely, but only in such quantities as will make their stocks complete. The opinion is pretty general that present prices on sheets may not be minimum later on, and both jobbers and consumers are buying cautiously. The supply of sheet bars is good, and none of the mills is suffering for lack of steel. Prices on sheets are given in detail on page 217.

**Tin Plate.**—Leading can makers and other large consumers of tin plate carried over very heavy stocks into this year, and as a result are not expected to come in the market for some time for their supply of tin plate this year, or until these stocks have been pretty well worked up. This explains why so few contracts for tin plate the first half of the year have so far been made. One leading interest reports that very few of its smaller customers have sent in contracts for their supply of tin plate the first half, but this is not general. There is a fair demand for small lots and operations among the tin plate mills are slightly better, probably averaging about 70 per cent. There is some foreign inquiry, but very little foreign business is being placed. We quote tin plate at \$7.35 per base box for domestic trade f.o.b. Pittsburgh. Prices onterne plate are given in detail on page 217.

**Wire Rods.**—Makers report the export inquiries for rods as being heavier than from the domestic trade. One local interest reports having made recently three or four fairly large sales of soft rods for export, at somewhat higher prices than are quoted for domestic. Operations of the mills rolling rods are lighter than for some time. Plenty of steel is available, but orders are scarce. Prices in rods are given in detail on page 217.

**Wire Products.**—There is a good deal of dissatisfaction among the independent mills over the new discounts on woven wire fencing which on some gages mean a reduction of as much as \$6.40 a ton, while on other gages the new discounts mean slight advances. It was understood, when the general committee of the American Iron and Steel Institute recommended that no reduction in price on wire products be made, that this would be carried out, but shortly after one leading interest issued the new discounts on woven wire fencing and other makers had to follow suit. It is claimed that present prices on nearly all kinds of wire and also wire nails do not allow a fair margin of profit. The demand is only fair, and most shipments now being made by the mills are on old orders placed last year. None of the wire and wire nail mills is operating to more than 70 to 75 per cent of capacity and the amount of business ahead on their books is relatively small. It is said the present prices on wire and wire nails are being firmly held, but here and there reports are received that prices are being shaded.

**Hot-Rolled Strip Steel.**—The demand is only fair, nearly all shipments now being made by the mills being on old orders placed last year, on which makers have readjusted prices to the present basis.

We quote hot rolled strip steel, as made by hoop and tandem mills, at 3.20c. per lb., while for deep stamping or drawing quality steel, 50c. per lb. extra is charged, all f.o.b. Pittsburgh.

**Cold-Rolled Strip Steel.**—Buying is light and is coming nearly entirely from the automobile trade. Jobbers' stocks are fairly heavy and they are buying only in such quantities as are needed to round out their stocks.

We quote cold-rolled strip steel at \$4.25 base per 100 lb. f.o.b. Pittsburgh, for 1½-in. and wider, 0.100 in. and thicker, hard temper in coils under 0.20 carbon. Boxings charge 25c. per 100 lb.

**Shafting and Screw Stock.**—All the makers have adopted a new list of extras on shafting. The demand is quiet and none of the shafting makers is operating to more than 50 to 60 per cent of capacity. Jobbers' stocks are fairly large and they are buying only such

quantities as are needed to give them a complete assortment of sizes.

We quote cold-rolled shafting at 20 per cent off list in carloads and 16 per cent in less than carloads, f.o.b. Pittsburgh.

**Bolts, Nuts and Rivets.**—Makers report a fair demand, but mostly in small lots that cover current needs. Jobbers and consumers seem to feel that present prices on nuts and bolts will not be minimum later on, and are placing orders only as actual needs require. This is always the dull season in the nut and bolt trade, and makers refer to the present demand as being about as heavy as usual at this season of the year. Discounts on nuts, bolts and rivets to the large trade are given on page 217.

**Spikes.**—The demand is quiet, railroads placing orders for only small quantities of spikes needed for repair work. Later on, it is expected there will be a good deal of new track laying, for which large quantities of spikes will be needed. Makers report the demand for small spikes is very quiet.

We quote standard spikes 9/16 x 4 1/2 in. at \$3.65 and small spikes at the same price in carload lots of 200 kegs or more at \$3.65 per 100 lb., plus usual extras. We quote hot spikes at \$5.00 base per 100 lb. plus usual extras, in carload lots of 200 kegs or more, all f.o.b. Pittsburgh.

**Rivets.**—The demand is dull as very little work in which rivets are used is under way at present. Jobbers' stocks are reported fairly heavy and they are not buying very freely.

We quote button head structural rivets at \$4.40 and cone head boiler rivets at \$4.50 base, f.o.b. Pittsburgh.

**Hoops and Bands.**—Demand is dull, and shipments now being made by the mills are mostly on old orders placed last week, on which makers have adjusted prices to the present basis.

We quote steel hoops and bands at \$3.30c. base, with the usual extras.

**Skelp.**—The market is very quiet, the demand being dull, with most mills rolling skelp operating to only 60 per cent of capacity.

We quote grooved skelp at \$2.65, universal skelp \$3.00 base. Special skelp for boiler tubes, etc., is \$3.15 for bases and \$3.30 for other sizes, all these prices being per 100 lb., f.o.b. Pittsburgh.

**Coke.**—It is the expectation of most coke makers that the Government will cease having supervision over prices on coke on Feb. 1, and as to what trend prices will have after that date is uncertain. Unless there is a material increase in output of blast furnace coke in the near future, it would not be surprising if prices on both furnace and foundry coke go higher than they are now. The demand for furnace coke is heavy and in the past month some stacks have had to bank waiting for coke to arrive. No contracts are being made for either furnace or foundry coke, as the future of prices is so uncertain. The output of coke in the upper and lower Connellsville regions for the week ending Jan. 4, was 253,980 tons, an increase over the previous week of 21,790 tons. Now that the holiday season is over, it is believed the output of coke will soon materially increase. At present, it is running fully 75,000 tons less than normal. Government prices still in effect are as follows:

We quote 48 hr. beehive blast furnace coke at \$6; 72 hr. beehive foundry coke at \$7 and crushed coke over 3/4 in. at \$7.50, all in tons of 2000 lb. at oven. We quote by-product coke at \$5.70 for run of ovens and \$6.70 for selected foundry coke in all States but Alabama and Washington. To these base prices should be added the freight rate from the competing beehive coke district which takes the lowest freight rates to the point where such by-product coke is produced, except that there shall be added for coke manufactured in New England 5c. for each 5c. above 60c. in the freight charges per ton (2240 lb.) of coal for water transportation on the coal used in the manufacture of such coke.

**Wrought Pipe.**—The Cosden & Co. interests, large operators in the Texas oil fields, have an active inquiry out for about 300 miles of 8-in. line pipe, to be laid from the new ranger oil fields in Texas to Tulsa, Okla., where the refineries of this company are located. This pipe runs about 29 lb. to the foot and, if the order is placed, will amount to close to 25,000 tons. Other interests operating in the ranger oil fields in Texas, notably the Texas Co., Standard Oil Co., and Gulf Refining Co., are reported to have inquiries out for considerable quan-

tities of line pipe, which are expected to be placed in the near future. Mills expect a heavy demand during this year for line pipe for gas and oil lines, very little work of this kind having been done in 1918, as the mills were working largely on Government orders, and it was impossible for oil or gas interests to get deliveries of line pipe. The demand for lapweld sizes of pipe is reported fairly heavy, but for butt weld sizes is dull, owing to building operations all over the country being so quiet. As a rule, iron and steel pipe mills are operating to about 75 per cent of capacity. Discounts on iron and steel pipe, effective from Jan. 1, are given on page 217.

**Boiler Tubes.**—The demand is very quiet, and shipments now being made by the mills, on both iron and steel tubes, are mostly on orders placed last year, prices on which have been adjusted to the new basis of discount as adopted on Jan. 1. Discounts on iron and steel tubes are given on page 217.

**Old Material.**—There has been no improvement in the demand for scrap, which has been very dull for the past two months, partly owing to steadily declining prices, but more largely because stocks of scrap held by consumers are very heavy, and they seem content to pretty well work these off before doing any buying. It is said that fairly large quantities of both borings and turnings for blast furnace use have been bought lately by pig iron interests at about \$12 per gross ton delivered. Large quantities of shell steel discards and other forms of semi-finished steel are being offered in this market by our own Government, and also by the Canadian Government, at prices fully as low as heavy melting steel. This has served to demoralize the local scrap market to a considerable extent. No sales of moment in scrap were made in the past week and prices are only fairly steady, and are largely nominal, as not enough scrap material is being sold to establish market prices. We quote largely nominally as follows:

Heavy steel melting, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, delivered	\$20.00 to \$21.00
No. 1 cast, for steel plants (nominal)	25.00 to 26.00
Rerolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Franklin, Pa., and Pittsburgh (nominal)	25.00 to 26.00
Compressed steel	18.00 to 19.00
Bundled sheet, sides and ends, f.o.b. consumers' mills, Pittsburgh district (nominal)	16.00 to 17.00
Bundled sheet stamping (nominal)	15.00 to 16.00
Railroad grate bars (nominal)	17.00 to 18.00
Low phosphorus melting stock	24.00 to 25.00
Iron car axles (nominal)	42.00 to 43.00
Locomotive axles, steel (nominal)	45.00 to 46.00
Steel car axles (nominal)	42.00 to 43.00
Railroad malleable (nominal)	22.00 to 23.00
Machine shop turnings	12.00 to 13.00
Cast iron wheels	26.00 to 27.00
Rolled steel wheels (nominal)	22.00 to 23.00
Sheet bar crop ends (at origin) (nominal)	30.00 to 31.00
Heavy steel axle turnings (nominal)	14.50 to 15.00
Heavy breakable cast	25.00 to 26.00
Cast iron borings	16.00 to 17.00
No. 1 railroad wrought	28.00 to 29.00

### French Government Honors American Steel Manufacturers

The French Government, wishing to show its gratitude to Americans who during the war rendered distinguished service to the cause of France and the Allies, has announced a number of promotions and nominations in the Legion of Honor.

Charles M. Schwab is to receive the Cross of Chevalier, and among the knights created are:

Richard G. Wood, president Alan Wood Iron & Steel Co.

James A. Farrell, president United States Steel Corporation.

E. P. Thomas, president United States Steel Products Co.

Samuel M. Vauclain, vice-president Baldwin Locomotive Works.

Joseph Clendenin, vice-president American Smelting & Refining Co.

J. A. Campbell, president Youngstown Sheet & Tube Co.



## Chicago

CHICAGO, Jan. 13 (By Wire.)

The general aspect of the market is one of quiet, but prices are firmly held and consumers are showing more of a disposition to do business. The principal company among the steel producers finds specifications surprisingly good. The producers of pig iron continue in a quandary as to what prices are to apply to old contracts, but guidance is expected to come from a meeting to be held in Pittsburgh Jan. 15. Meanwhile there is no new business. A large Southern producer has notified its agents that contracts are to stand as written. The entire trade is very much at sea.

Once again a movement is on foot to have Chicago re-established as a basing point, the demand this time springing from Western fabricators, tank makers and other consumers. The president of the Illinois Manufacturers' Association has appointed a committee which is to arrange for a conference between steel producers and consumers. Prominent steel men, as heretofore, see no advantage to be derived from the plan so far as the steel trade is concerned, though they admit an advantage would accrue to the consumers. They say Eastern mills do not desire to pay freight to Chicago on their products, while the local mills do not wish to relinquish the augmented price which the freight represents when prices are fixed on a Pittsburgh basis, and they say an old established trade custom cannot be easily laid aside.

Further declines are shown in old material, which bring the bottom near.

**Pig Iron.**—Several uncertainties must be smoothed out before the pig iron trade can proceed in a manner at all approaching normal. At the moment there is a great lack of unanimity in procedure, but a betterment may follow a meeting to be held Jan. 15 at Pittsburgh. Much needed, apparently, is strong leadership in revising contracts on the new \$31 base. A large Southern merchant producer has notified its agents that contracts are to be carried out as originally written, this meaning that some consumers will have the benefit of a low silicon differential, while others who contracted more recently will have to pay the higher differential which was in effect at the close of the year. Meanwhile several of the companies are invoicing at the last Government maximum price. It is quite generally agreed that Southern high-cost furnaces can hardly thrive on the \$31 base, one of their troubles being intrastate freight rates on coal, lime, etc., which add between \$2 and \$2.50 to their costs. There is no new business at any price.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace, and do not include a switching charge averaging 50c. per ton:

Lake Superior charcoal, Nos. 2 to 5.....	\$38.70 to \$39.00
Lake Superior charcoal, C to AA.....	40.70 to 42.50
Lake Superior charcoal, No. 6.....	41.20 to 41.50
Northern coke foundry, No. 1 silicon, 2.25 to 2.75.....	32.25
Northern coke foundry, No. 2 silicon, 1.75 to 2.25.....	31.00
Northern high-phosphorus foundry.....	31.00
Southern coke, No. 1 foundry and No. 1 soft silicon, 2.75 to 3.25.....	39.00
Southern coke, No. 2 foundry, silicon, 2.25 to 2.75.....	37.25
Southern foundry, silicon, 1.75 to 2.25.....	36.00
Malleable, not over 2.25 silicon.....	31.50
Basic.....	30.00
Low phosphorus (copper free).....	52.50
Silvery, 7 per cent.....	50.00

**Ferroalloys.**—No business whatever is reported. While the nominal quotation for 70 per cent ferromanganese is \$225 delivered, it is admitted that a lower price would not be spurned, but there are no offers.

We quote 70 per cent ferromanganese nominal at \$225 delivered; 50 per cent ferrosilicon at \$155 to \$162.50, delivered, and 16 to 18 per cent spiegeleisen at \$65 furnace.

**Structural Material.**—There are many inquiries, but the bulk of them are small, and largely represent efforts to buy from the mills instead of from jobbers. The Omaha Structural Steel Co. will fabricate 408 tons for a power house to be erected for Armour & Co. at South Omaha, Neb. The Wisconsin Bridge Co. will sup-

ply 104 tons to the Chicago, St. Paul, Minneapolis & Omaha Railroad for a girder bridge at Minneapolis. The Atlantic Coast Line is asking for bids on 300 underframes.

The mill quotation is 2.80c., Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery. Jobbers quote 4.07c. for material out of warehouse.

**Plates.**—Some large inquiries for plates are said to exist, but they are developing slowly. Meanwhile there is a fair demand for small lots wanted for tanks and general work, including cars, and a little is being sold for export.

The mill quotation is 3c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers quote 4.27c. for plates out of stock.

**Bars.**—The mills are receiving a fair aggregate of orders for mild steel bars, and specifications are good. The demand for concrete reinforcing material also is fair. Iron bars are quiet. For common bar iron the quotation of 2.90c. stands.

Mill prices are: Mild steel bars, 2.70c., Pittsburgh, taking a freight rate of 27c. per 100 lb.; common bar iron, 2.90c., Pittsburgh; refined iron bars, 3.65 to 4.40c.; rail carbon, 2.80c., Pittsburgh.

**Sheets.**—The market is slowly becoming more active. Jobbers have indicated their readiness to buy, but they continue to look for guarantees against declines, something the mills are not willing to grant. It is pointed out that such a course would supply an incentive for the jobbers to cast about for lower prices or offers, or finding which they would ask that their contract price be revised.

Chicago delivery out of stock regardless of quantity. No. 10 blue annealed, 5.17c.; No. 28 black, 6.22c., and No. 28 galvanized, 7.57c.

Mill quotations are 4.70c. for No. 28 black, 3.95c. for No. 10 blue annealed, and 6.05c. for No. 28 galvanized.

**Wire Products.**—Except in a few lines such as flat wire, a much better business was done in the last week, although inventories are not yet concluded. Wire makers, like sheet makers, are not disposed to give guarantees against declines.

**Old Material.**—Business is restricted to the taking of occasional bargains in which extremely low prices are made. It is believed the attitude of the Government as to what is has to sell, and what it gets, will have important bearing, while the status of the mills in regard to supply is an unknown factor. Several railroads have issued lists and the aggregate tonnage they offer is fairly large.

We quote for delivery in buyers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Iron rails.....	\$28.00 to \$29.00
Relaying rails.....	50.00 to 55.00
Carwheels.....	26.00 to 27.00
Steel rails, rerolling.....	22.00 to 23.00
Steel rails, less than 5 ft.....	22.00 to 23.00
Heavy melting steel.....	16.50 to 17.00
Frogs, switches and guards, cut apart.....	16.50 to 17.00
Shoveling steel.....	16.50 to 17.00
Heavy steel axle turnings.....	14.00 to 15.00

### Per Net Ton

Iron angles and splice bars.....	\$24.00 to \$25.00
Steel angle bars.....	19.50 to 20.50
Iron arch bars and transoms.....	27.50 to 28.00
Iron car axles.....	31.00 to 32.00
Steel car axles.....	27.00 to 28.00
No. 1 railroad wrought.....	18.50 to 19.50
No. 2 railroad wrought.....	17.00 to 18.00
Cut forge.....	19.50 to 20.50
Pipes and flues.....	15.00 to 16.00
No. 1 busheling.....	16.50 to 17.00
No. 2 busheling.....	10.00 to 11.00
Steel knuckles and couplers.....	22.50 to 23.00
Coil springs.....	23.00 to 24.00
No. 1 cast.....	22.00 to 23.00
Boiler punchings.....	24.00 to 25.00
Locomotive tires, smooth.....	25.00 to 26.00
Machine-shop turnings.....	8.50 to 9.00
Cast borings.....	10.50 to 11.50
Stove plate and light cast.....	17.00 to 17.50
Grate bars.....	16.00 to 16.50
Brake shoes.....	16.00 to 16.50
Railroad malleable.....	17.00 to 18.00
Agricultural malleable.....	18.00 to 19.00
Country mixed.....	12.00 to 13.00

**Cast-Iron Pipe.**—Detroit will take bids Jan. 14 on 2000 tons, this being the only business reported.

We quote per net ton, f.o.b. Chicago, ex-war tax, as follows: Water pipe, 4-in., \$69.80; 6-in. and larger, \$68.50; class A and gas pipe, \$1 extra.

**Bolts and Nuts.**—Prices are unchanged, and orders are few and small, indicating a waiting attitude on the

part of consumers. For mill prices see Finished Iron and Steel, f.o.b. Pittsburgh, page 217. Jobbers quote:

Structural rivets, 5.67c.; boiler rivets, 5.77c.; machine bolts up to  $\frac{3}{4}$  x 4 in., 40 per cent off; larger sizes 25 and 30 off; carriage bolts up to  $\frac{3}{4}$  x 6 in., 35 off; larger sizes, 20 and 25 off; box pressed nuts, square topped, 78c. off; hexagon tapped, 80c. off; coach or lag screws, gimlet points, square heads, 10 per cent off. Quantity extras for nuts are canceled.

**Rail and Track Supplies.**—Inquiries for track fastenings continue the feature of this market.

Standard railroad spikes, 3.65c., Pittsburgh. Track bolts, with square nuts, 4.90c., Pittsburgh. Tie plates, steel, 3c., Pittsburgh and Chicago; tie plates, iron, 3.30c., f.o.b. maker's mill. The base for light rails is 3c., f.o.b. maker's mill, with usual extras.

## Philadelphia

PHILADELPHIA, Jan. 14.

Readjustment policies are not yet fully worked out, and meanwhile trade is waiting. Practically the only business being done in pig iron, steel or scrap is small lots for prompt shipment. The market is barren of interesting developments, neither export nor domestic business showing as yet any signs of increasing demand.

Consumers of pig iron are insistently urging revision of prices on old contracts, but the furnaces are resisting such revision when contracts specifically read that the "last-named Government price" was to apply on deliveries made after the withdrawal of Government prices. A few furnaces have revised all contracts to the basis of \$30 for basic and \$31 for No. 2 foundry iron, while others are still quoting \$3 a ton higher, and some spot business in lots up to 200 tons has been done the past week at the higher quotations. Virginia producers have decided to abandon the Birmingham basing, and will sell f.o.b. furnace, but for the present will adhere to the base price of \$34 for foundry iron. Small sales have been made, which with the freight rate to Philadelphia of \$4.10 makes the delivered price in this market \$38.10, as compared with \$34.90 for the same grade of iron from eastern Pennsylvania furnaces.

The scrap market is weaker, prices showing a further downward tendency, but dealers believe the bottom is about reached. Demand is light and some consumers have ordered suspension of shipments on contracts.

Eastern bar iron makers have not yet taken any action toward reducing prices, but it is admitted that a reduction will be made soon. Meanwhile a few orders are being accepted subject to revision if the price is lowered.

**Pig Iron.**—Neither consumers nor producers are in a mood to negotiate pig iron business, except small lots for prompt shipment. Consumers are to a large extent well supplied, both as to stock on hand and under contract, while sellers are in an equally independent position, being, with rare exceptions, well sold ahead. Consequently they are taking a conservative attitude as to future business so as not to unduly disturb present market prices. A good sized tonnage of iron might be procurable at lower than existing quotations, but in the absence of any such buying interest, producers will go slow about taking any action which would tend to start prices downward. Virginia producers two weeks ago indicated that they would continue to sell on a Birmingham base, but would reduce prices \$3 a ton. Since then, they have changed their position and several lots of foundry iron have been sold in the past week on the basis of \$34, furnace, making the delivered price \$38.10, Philadelphia, and we accordingly adjust our quotations to that basis. Eastern Pennsylvania and Buffalo furnaces are selling small lots at a price which makes its delivered cost in Philadelphia \$34.90, while basic has been sold at \$33.90, Philadelphia. No concessions from these prices are apparent at the moment, though consumers seem generally of the opinion that quotations will eventually go lower. Sellers, however, see the situation in a rather strong light, but the declines in scrap are pointed to in other quarters as indications of a similar trend, though

perhaps not so marked, for pig iron. Consumers are insistently urging revision of prices on contracts, which in numerous instances is being done. In a few cases, a compromise reduction of \$1.50 has seemingly satisfied the consumer. Some sellers go so far as to say that practically all contracts must eventually be revised, the alternative being legal action, which both parties generally wish to avoid. We quote standard grades of iron for delivery in Philadelphia or vicinity except standard low phosphorus, which is quoted f.o.b. furnace:

Eastern Pennsylvania No. 2 X (2.25 to 2.75 sil.)	\$36.15
Eastern Pennsylvania No. 2 foundry (1.75 to 2.25 sil.)	34.90
Virginia No. 2 X (2.25 to 2.75 sil.)	39.35
Virginia No. 2 foundry (1.75 to 2.25 sil.)	38.10
Basic	33.90
Gray forge	33.90
Standard low phosphorus, f.o.b. furnace	51.00
Copper-bearing low phosphorus	48.90

**Ferroalloys.**—The market is dead, consumers showing no interest. A leading producer of ferromanganese has two of its four furnaces out of blast. Consumers are trying to cancel contracts, but producers object. Several legal actions to test these contracts are in prospect. Ferromanganese is nominally quoted at \$225 for 70 per cent and spiegeleisen at \$65 for 16 to 18 per cent.

**Billets.**—No business is being done. Considerable resale material is available, much of it of shell-forging quality, but consumers are showing no interest. We quote open-hearth reolling billets at \$47.30, Philadelphia.

**Finished Iron and Steel.**—Only a small volume of business is being done, mainly replenishing orders. Shipyards have large stocks of plates and shapes on hand. The British Government is offering to sell plates, shapes, bars and other steel products, which were ready for shipment when the armistice was signed, but the prices at which the material is held are, according to brokers, too high to move it in the present condition of the market. Steel production is showing an average reduction of perhaps 25 or 30 per cent. Two plants are operating at about 50 per cent, while others vary from 70 to 100 per cent. Several small bar iron rolling mills have shut down because of lack of orders. Common merchant iron is being nominally quoted at 3.50c., Pittsburgh, but no business is being done except where the seller agrees to protect the customer on price declines. A few small sales have been made on this basis. A New York broker has offered bar iron in this district at 2.90c., Pittsburgh. Export demand is not large, being mainly from South America. Business with Japan is held back because of the failure of more than 300 metal brokers in that country since the armistice was signed. Plates in the hands of speculators in Japan had gone as high as 35c. per lb. and many brokers suffered large losses. High ocean freight rates are making it very difficult, if not impossible, to do business with Europe and the Far East. Prices for export and domestic trade are now identical in most instances. We quote plates at \$3.245c., structural shapes at 3.045c., soft steel bars at 2.945c., bar iron at 3.745c., No. 10 blue annealed sheets at 4.145c., No. 28 black sheets at 4.945c., and No. 28 galvanized sheets at 6.295c., all Philadelphia.

**Old Material.**—Demand from consumers is not large, but a few sales are being made. Prices tend downward, but dealers believe the bottom is about reached and that buying interest would stiffen the market. The large quantity of war material which will some time reach the market as scrap is, however, unquestionably a factor with which to reckon in predicting the future course of the market. It is apparent that the supply of scrap released by the ending of the war will prevent any shortage for a long time to come and this may have a tendency to hold prices to relatively low levels despite any active demand which may develop. It is expected that the Government will release its war scrap gradually so as not to depress the market unduly, but no definite policy has yet been worked out. Much of the Government scrap must be sorted, graded and prepared in scrap yards, and the way in which it is absorbed by consumers will depend to a considerable



degree on the capacity of yards to handle it. Several Eastern mills have ordered suspension of shipments on contracts, being already oversupplied and this has further weakened the market. We quote as follows for delivery at consumers' works in the Philadelphia district:

No. 1 heavy melting steel.....	\$18.00 to \$20.00
Steel rails, rerolling.....	23.00 to 25.00
No. 1 low phosphorus, heavy, 0.04 and under.....	24.00 to 26.00
Iron rails.....	30.00 to 32.00
Carwheels.....	25.00 to 26.00
No. 1 railroad wrought.....	24.00 to 25.00
No. 1 yard wrought.....	22.00 to 24.00
Country yard wrought.....	14.00 to 15.00
No. 1 forge fire.....	17.00 to 19.00
Bundled skeleton.....	17.00 to 19.00
No. 1 busheling.....	18.00 to 19.00
No. 2 busheling.....	14.00 to 15.00
Turnings (for blast furnace use)....	10.00 to 12.00
Machine-shop turnings (for rolling mill use).....	12.00 to 13.00
Cast borings (for blast furnace use).....	10.00 to 12.00
Cast borings (clean).....	15.00 to 16.00
No. 1 cast.....	24.00 to 25.00
Grate bars.....	18.00 to 20.00
Stove plate.....	18.00 to 20.00
Railroad malleable.....	18.00 to 20.00
Wrought iron and soft steel pipes and tubes (new specifications).....	18.00 to 20.00
Ungraded pipe.....	14.00 to 16.00

## Buffalo

BUFFALO, Jan. 13.

**Pig Iron.**—Producers report a noticeable improvement in the market the past week, with some increase in inquiry and a brighter outlook. Basic in particular shows a better demand than for several weeks. A more united stand appears to have been taken by the furnace interests of the district, and practically all have now written down their contracts to meet the suggestions and the spirit of the committee of the American Iron and Steel Institute with respect to price reduction from the Government schedule formerly ruling—i. e., a base price of \$31 for 1.75 to 2.25 per cent silicon content, applying where contracts carry Government clauses. This action, however, does not involve contracts of any kind entered at a definite price with no exemption clauses whether above or below the Government basis of prices as applied in the past. Inquiry does not embrace any large tonnages, being principally for small lots, averaging 250 tons. Some melters are requesting that delayed deliveries be hurried forward. These delayed tonnages consist in some instances of iron on war contracts which furnaces declined to cancel, but on which they were willing to defer delivery for later specification. Some foreign inquiry is before the market, including one small lot of about 500 tons of foundry for Japan and one of a much larger tonnage for the same country. The price schedule on new business is quoted the same as a week ago, f.o.b. furnace, Buffalo:

No. 1 foundry, 2.75 to 3.25 silicon.....	\$34.00
No. 2 X, 2.25 to 2.75 silicon.....	32.25
No. 3 foundry, 1.75 to 2.25 silicon.....	31.00
Gray forge.....	30.00
Malleable silicon not over 2.25.....	31.50
Basic.....	20.60
Bessemer.....	32.25
Lake Superior charcoal, regular grades, f.o.b. Buffalo.....	\$8.50

**Finished Iron and Steel.**—While there has not been a great deal of buying, a considerable tonnage of various finished products, bars, small shapes, etc., that has been under suspension, has been released with sizes changed to meet present requirements, so that mills are in better condition than they have been for several weeks in that tonnage on books is live tonnage, against which shipments are moving forward. There is a fair demand for shapes. One mill reports that it is putting through some good orders. The plate market, although not showing much activity at the present moment, has picked up somewhat since the first of the year, with indications that the situation will improve in the near future.

**Old Material.**—The market is still characterized by lack of activity and an almost entire absence of buying. Most consumers have considerable stocks of material

on hand, and under present conditions have not yet reached a point where they are interested in buying. Scrap dealers, however, and some mills also, believe that the time is not so very far off when a buying movement will be likely to set in. The only commodity to show the least signs of life at present is cast borings, and transactions have been very few in this line. Considerable quantities of shell billets left over on Government contracts remain to be absorbed by the market, and it is a puzzling question as to how they will be disposed of. Shipments of these billets which have been made to Canadian interests working on American shell contracts, or which have been stopped in transit into Canada, are likely to be thrown on the market here with no demand for them, as mills appear to be absolutely out of the market for melting steel. It is expected that all local shell contracts will have been completed by the end of the present month. The current price schedule is largely nominal. We quote as follows per gross ton, f.o.b. Buffalo:

Heavy melting steel, regular grades.....	\$17.00 to \$18.00
Low phosphorus, 0.04 and under.....	23.00 to 24.00
No. 1 railroad wrought.....	23.00 to 24.00
No. 1 machinery cast.....	25.00 to 26.00
Iron axles.....	27.00 to 28.00
Steel axles.....	27.00 to 28.00
Car wheels.....	25.00 to 26.00
Railroad malleable.....	25.00 to 26.00
Machine shop turnings.....	10.00 to 11.00
Heavy axle turnings.....	15.00 to 16.00
Clean cast borings.....	14.00 to 15.00
Iron rails.....	24.00 to 25.00
Locomotive grate bars.....	21.00 to 22.00
Stove plate.....	21.00 to 22.00
Wrought pipe.....	15.00 to 16.00
No. 1 busheling.....	16.00 to 17.00
Bundled sheet stamping.....	15.00 to 16.00

## Birmingham

BIRMINGHAM, ALA., Jan. 13.

**Pig Iron.**—There has been no change in the Southern iron market with regard to the attitude of the independent iron masters, who, with one accord, are asking \$34 and have declined thus far to book under that level. The only business going has been small lots, largely for prompt delivery. That has brought \$34 uniformly. One lot of 100 tons of high silicon sold at \$39.50, the precise price set by the Government in the \$34 scale. Other lots, from carload to 100 tons, of which showing was made, were booked at the \$34 level. Onlookers, including consumers, believe the attitude with regard to the higher price on current business is with a view as much to hold that price on iron already booked as to get it on new bookings. In other words, the consumers believe the furnace men feel that a lower price on forward business would jeopardize that price on iron already booked. So, up to that point where orders begin to cry for new business, and to the extent of their ability to do so, the independents will probably stick to \$34. Production is at a low ebb owing to the slump in coal and coke following a two weeks' holiday. The decrease of over 400,000 tons below even the reduced average of the past autumn hit hard. The Tennessee company blew out No. 3 at Bessemer for relining on Dec. 30. This was on basic. On the same day it banked No. 4 at Bessemer, on basic, for want of coke, and banked its Alice in Birmingham, on basic. On Jan. 7 it banked No. 1 Bessemer, on foundry, and on Jan. 8 blew out Little Belle at Bessemer, which was on ferromanganese. The Woodward Iron Co. blew out its Woodward stack, but will blow in a Vanderbilt that has just been relined. The only business going being at \$34, we quote per gross ton, f.o.b. Birmingham district furnaces, for prompt delivery, as follows:

No. 2 foundry and soft.....	\$34.00
Basic.....	33.00

**Cast-Iron Pipe.**—There has been no improvement in the cast-iron pipe trade. The leading interest is operating both Birmingham and Bessemer plants at about 50 per cent. Some pipe interests sounded the Birmingham market for pig iron during the week and received a quotation of \$34 in every instance. Sanitary shops look for considerable business with the opening of spring, when merchants must take on stocks, but there

is not in the wind right now. Prices had not been revised at the close of the past week.

**Old Material.**—The scrap market remains at its low ebb, without any signs of ability to recover. Old steel scrap and heavy melting steel are marked down another \$1 this week. The consumers continue to govern the situation. We quote per gross ton, f.o.b. Birmingham district yards, prices to consumers as follows:

Good steel	\$30.00 to \$31.00
Good iron	18.00 to 18.50
Heavy melting steel	16.50 to 17.00
No. 1 railroad wrought	20.00 to 21.00
No. 1 cast	21.00 to 22.00
Castings	20.00 to 21.00
Truck wheels	19.50 to 20.00
Machine shop turnings	8.50 to 9.00
Cast iron borings	8.50 to 9.00
Scrap plate	14.00 to 15.00

## British Steel Market

### Coke Strike Menaces Pig Iron Output—Belgium Inquiring for Iron and Machinery (By Cable)

LONDON, ENGLAND, Jan. 15.

A strike at the Cleveland coke ovens threatens to diminish the pig iron output, which is already deficient, and exports to neutrals are impossible. Some steel works are refusing new business owing to the uncertainty of general conditions. America is offering export steel bars at £15 5s. and billets at \$50 f.a.s. Belgium is inquiring for pig iron and machinery, but it is believed that it will be a long time before steel works there are operating, the Cockerill plant requiring at least two years to reconstruct it. Following are the revised official domestic maximum prices for steel applicable after Feb. 1, 1919, per gross ton, net f.o.b. makers' works:

Ship, bridge and tank plates, £14 [£11 10s.].*	
Boiler plates, £15 [£12 10s.].	
Ship, bridge and tank plates, thin, £16 [£14 10s. to £17 10s.].	
Angles and bulb angles, £13 12s. 6d. [£11 2s. 6d.].	
Small angles, tees and flats, £16 10s. [£14 to £16].	
Beams, £13 12s. 6d. [£11 2s. 6d.].	
Rails, 60 lb. per yd. and upward, £13 7s. 6d. [£10 17s. 6d.].	
Rounds, squares and hexagons, £14 5s. [£12 10s. to £13].	
Small rounds, squares and hexagons, £16 10s. [£15 to £15 10s.].	
Blooms, billets and slabs for rolling, £11 12s. 6d. [£10 7s. 6d.].	
Blooms, billets and slabs for forging, £12 15s. [£11].	
Ingot for re-rolling, £9 5s.	

\*Prices in brackets are the official control prices for domestic business effective till Feb. 1.

## San Francisco

SAN FRANCISCO, Jan. 9.

The local market is influenced to a large extent by the unrest of the labor market in this section. While no trouble is looked for in the shipyards over dissatisfaction with the Macy award, the friction between employers and employees in the machine shops is serious. Offers were made by the Iron Trades Council on Jan. 6 to compromise the retroactive features of the award and a joint meeting was held with the California Metal Trades Association and the California Foundrymen's Association to discuss this offer. The employers' associations feel that they can not afford to pay any retroactive wages and declined to entertain a compromise proposition. Thereupon the Iron Trades Council held a meeting and voted to refer the controversy to the affiliated unions for a strike vote returnable in two weeks. Should a strike be called 10,000 men employed in 200 metal trades plants and foundries would be affected.

Adjustments to an open market seem in a fair way to be brought about with only temporary slacking in demand. Leading interests do not look for much revival before next month, and it is likely that the entire market will not get down to a stable basis before summer. There seems to be a tendency to hold off in buying in large amounts in the belief that lower prices will follow the first downward dip of the market. On the other hand, many believe that the manufacturers

of iron and steel products are in much better position to wait for orders than the consumers are to wait for material. With no reserve stocks the consumer can do nothing unless he buys at once, but most of the mills have made good profits and can afford to use some of these in renewing stocks at their own plants while waiting for consumers to buy. In this section of the country it looks like a contest to see which can hold out the longer and the general belief is that the mills are in the better position. In this event there will be no substantial reductions in most materials in the immediate future, although a gradual shrinkage in prices is expected on all hands. Jobbers' prices have not as yet been changed in this city, although a change may be made at any time. The demand on the jobbers is proving better than was expected and an effort is being made to cut stocks as low as possible before material reductions are made.

**Bars.**—There has been a brisk inquiry for reinforcing bars and the local market is considered steady.

**Structural Steel.**—There is practically no demand for structural steel at present prices. It is felt that it would be bad business policy to build at present cost of all building materials, but a good deal of building is projected.

**Plates and Sheets.**—The market for plates is dull and demand is at a very low ebb. Sheet steel and galvanized sheets are in greater demand than plates, but no large work has yet been undertaken that requires a considerable amount of these materials.

**Wrought Pipe.**—Notwithstanding the fact that a \$6 reduction in the price of welded tubular goods went into effect on Jan. 1, there are no big jobs in immediate sight. Orders for small amounts are fair, almost normal, but the big users of wrought pipe are evidently holding off with the expectation that a lower price will be named in the near future.

**Cast-Iron Pipe.**—What is true of wrought pipe is true of cast iron, except that no reduction has as yet been announced in this territory. There is considerable inquiry and the future is regarded as bright, but no immediate sales in quantity are reported.

**Pig Iron.**—The trade is watching the Eastern pig market very closely to formulate an opinion on the general market trend, but in this market the only pig coming in is on the old contracts and many of these are reported to be about to expire.

**Coke.**—Coke is more plentiful than it has been for a number of months. A number of the foundries are now getting more than their immediate needs call for and are accumulating something of a reserve stock.

**Old Materials.**—Since the removal of the Government sustained price scrap is somewhat easier. There seems to be plenty in sight for immediate needs, and this was likely brought about by some of the holders seeing what was coming and deciding to sell. A good many of the foundries have accumulated more than their immediate wants call for. This condition, however, cannot be maintained, as the removal of the Government embargo on shipping to export is bound to bring Japan into the market and cause a shortage. Quotations are nominally unchanged. The basic price remains \$34, although the deviations for kind and quality are said to be greater than for some time past.

## St. Louis

ST. LOUIS, Jan. 13.

**Pig Iron.**—The waiting policy seems to control the pig iron market at this point, and while some special small sales are going through, they are all for immediate needs and do not amount to much in the aggregate. Consumers continue to have no interest in the market and are not inclined to take any unshipped tonnages, no matter what the terms offered, seeming to feel that until the market stabilizes there is no occasion to worry, particularly as they have enough material on hand to meet any pressing needs that may arise. Shipment of delayed tonnage at the "market" price at the time of shipment has no attractions, as buyers assert that there



is nothing moving sufficient definitely to make a market. A few furnaces are definitely seeking business at \$3 below the recent Government fixed price, and some others are willing to take that price, but are not actively in the market, while still others are standing pat and doing nothing. In consequence, there is literally no activity in the market, although dealers profess to believe that the buyers will begin to come into the market soon after Feb. 1. On what basis they assume this is not yet apparent.

**Coke.**—Although there is some demand for domestic coke, the metallurgical division of the market is practically dead, and no transactions of consequence are reported. The Government price is still nominally quoted.

**Finished Iron and Steel.**—In finished products, mill representatives report some renewed interest in structural material evidenced by the development of plans for spring building, but little definite business is reported. Generally speaking, the situation is just now one of feeling the way with the mill quotations at 2.80c. for structural material, 2.70c. for bars and 3.00c. for plates. Warehouse business is also quiet, with quotations for stock out of warehouse as follows: Soft steel bars, 4.04c.; iron bars, 4.04c.; structural material, 4.14c.; tank plates, 4.34c.; No. 8 sheets, 5.19c.; No. 10 blue annealed sheets, 5.24c.; No. 28 black sheets, cold rolled, one pass, 6.29c.; No. 28 galvanized sheets, black sheet gage, 7.64c.

**Old Material.**—The scrap market shows no stiffening tendency and dealers generally are sitting back and waiting to see what developments the coming weeks are likely to bring forth. Such trading as is going on is to fill immediate needs on contracts and prices are entirely governed by the conditions of the moment—the needs of buyer and seller. The railroads are no longer selling direct to consumers under Government instructions and are therefore bearing the market with the supplies of scrap which they are offering and which dealers are unwilling to take unless at a price low enough to assure a reasonable chance of a good profit for carrying until a sale can be made. Consumers are taking under contracts only what they immediately need and are increasing the severity of inspection.

Per Gross Ton	
Old iron rails.....	\$27.00 to \$27.50
Old steel rails, rerolling.....	21.50 to 22.00
Old steel rails, less than 3 ft.....	18.50 to 19.00
Relaying rails, standard sections, subject to inspection.....	45.00 to 50.00
Old carwheels.....	22.00 to 22.50
No. 1 railroad heavy melting steel.....	18.00 to 18.50
Heavy shoveling steel.....	17.00 to 17.50
Ordinary shoveling steel.....	16.00 to 16.50
Frogs, switches and guards, cut apart.....	18.00 to 18.50
Ordinary bundled sheet scrap.....	11.00 to 11.50
Heavy axle and tire turnings.....	12.00 to 12.50

Per Net Ton	
Iron angle bars.....	\$22.00 to \$23.00
Steel angle bars.....	16.00 to 16.50
Iron car axles.....	29.00 to 29.50
Steel car axles.....	25.50 to 26.00
Wrought arch bars and transoms.....	24.00 to 24.50
No. 1 railroad wrought.....	18.00 to 18.50
No. 2 railroad wrought.....	17.00 to 17.50
Railroad springs.....	15.00 to 15.50
Steel couplers and knuckles.....	15.00 to 15.50
Locomotive tires, 42 in. and over, smooth inside.....	14.50 to 15.00
No. 1 dealers' forge.....	12.50 to 13.00
Cast iron borings.....	10.00 to 10.50
No. 1 busheling.....	15.50 to 16.00
No. 1 boilers cut to sheets and rings..	10.50 to 11.00
No. 1 cast.....	16.50 to 17.00
Stove plate and light cast.....	14.00 to 14.50
Railroad malleable.....	14.00 to 14.50
Agricultural malleable.....	13.00 to 13.50
Pipes and flues.....	12.50 to 13.00
Heavy railroad sheet and tank.....	11.00 to 11.50
Railroad grate bars.....	11.00 to 11.50
Machine shop turnings.....	10.00 to 10.50
Country mixed.....	11.50 to 12.00
Uncut railroad mixed.....	12.00 to 12.50
Horseshoes.....	16.00 to 16.50

The U. T. Hungerford Brass & Copper Co., 80 Lafayette Street, New York, has acquired a five-story building, about 25 x 100 ft., adjacent to its present 17-story structure.

## New York

NEW YORK, Jan. 14.

**Pig Iron.**—Another step toward the abandoning of the Birmingham basing system so far as Virginia furnaces are concerned has been taken by some of the furnaces which are now quoting at their own furnaces instead of on the Birmingham basis. The new differentials are not, however, exactly like that of the recent Government schedule, 'as relatively higher prices are asked for the high-silicon irons. The schedule has not been made public in detail. Negotiations for the revision of many contracts are still pending, the usual policy being to extend deliveries rather than to grant lower prices. Foreign business does not develop rapidly, but inquiries are still pending. Although the new rate to Japan from New York ranges from \$30 to \$40, the rate from Liverpool to Japan is about \$12 and American exporters are thus handicapped, but against this is the advantage in prices, as American prices are lower than the export prices in England. We quote prices as follows for tidewater delivery for Northern and Southern grades:

No. 1 foundry, silicon, 2.75 to 3.25.....	\$28.30
No. 2 X, silicon, 2.25 to 2.75.....	26.35
No. 2 plain, silicon, 1.75 to 2.25.....	25.30
No. 2 X, Virginia, silicon, 2.25 to 2.75.....	26.40
No. 1 Southern (all rail).....	29.95
No. 2 Southern (all rail).....	28.70

**Ferroalloys.**—It is officially announced by the War Trade Board that importations of British ferromanganese will now be permitted covering all contracts made prior to April 6, 1917. It is understood that this means the importation of about 25,000 to 27,000 tons which was sold by British representatives in this country prior to that date, most of it at a price ranging from \$164 to \$185 per ton, seaboard. Some of it, however, was sold on the marriage contract basis of a certain amount at higher levels joined with that bought at \$3 some time previously. The demand for either ferromanganese or spiegeleisen is absolutely flat, not even inquiries or sales of carload lots being reported. Domestic producers continue to hold their ferro-manganese at \$225 per ton, delivered. Spiegeleisen, it is believed, can be bought as low as \$60, furnace. Production of ferromanganese in December was considerably below that for November, and it is predicted that the output for January will be decidedly lower. The 50 per cent ferrosilicon market is hard to quote, demand being very light and many consumers who had shell contracts are known to be oversupplied with this alloy. It is admitted, however, that the material can be bought as low as \$130 per ton on contract with spot delivery slightly above this level.

**Finished Iron and Steel.**—The steel market is extremely dull, demand from home and abroad being confined to small, replenishing orders. There are a great many export inquiries in the market, but very little business is being closed. Export companies are greatly worried over the shipping situation, the freight rates from New York to foreign ports being so much higher than from English ports to the same destinations that competition with England is very difficult. If the United States Shipping Board would release a larger number of ships for commercial trade it would become less easy for foreign shipping companies to obtain the high freight rates which now obtain. The rates established by the Shipping Board, though lower than the rates charged from American ports by foreign ships, are higher than the rates fixed by the British Government on shipments from that country. For example, the Shipping Board rate from New York to Rio de Janeiro, Brazil, is \$25 per ton, but British ships are getting \$35 per ton from New York, though the rate from England to Rio de Janeiro is regarded as about \$15. The rate to Japan and China, as fixed by the Shipping Board, is \$45; to Dutch East Indies, \$40; to Australia and New Zealand, \$40, and other rates are in proportion. The structural steel market is inactive but a few new inquiries are before the fabricators. About 400 tons will be required for a Federal Reserve Bank in Richmond, Va. The Consolidated Gas Co.

Baltimore, has let a contract to Dietrich Brothers, that city, for a 200-ton fabricating job. The American Bridge Co. has received a formal order for 23,500 tons for the new Naval Ordnance plant at Charleston, W. Va. The Terry & Tench Co., New York, was low bidder on New York subway extensions which will require 16,000 tons of steel, but the contract has not yet been awarded. The American Bridge Co. has received an order for a 400-ton bridge for the Pennsylvania Railroad. No decision has been announced as to the purchase of about 6000 tons of steel for 24 radio towers to be built at Monroe, N. C., by the Navy Department. Car builders are fully engaged in turning out cars for the Railroad Administration, but there is little or no new business in sight either for domestic or foreign roads. One car-building company has about 1000 new freight cars in storage pending settlement of the controversy between railroads and the Railroad Administration as to whether the roads shall accept these cars at the high prices which the Government was obliged to pay for them. A few rail mills are in need of orders, with nothing of importance in prospect. There is a large oversupply of light rails, some of which are being offered for resale. The trade expects that makers of bar iron in the East will reduce prices, but no action has been taken at this writing. Common merchant iron is reported to have been offered for resale at 2.90c., Pittsburgh, but whether any business has been done at this price is not known. Makers are guaranteeing customers against price declines in accepting such small orders as are being offered. Jobbers are generally buying steel bars in preference to bar iron. We quote mill shipments as follows: Steel bars, 2.97c.; shapes, 3.07c.; plates, 3.27c.; common bar iron, 3.77c.; refined bar iron, 5.27c., all New York. Out of store prices are as follows: Steel bars, 3.97c.; structural shapes, 4.07c.; plates, 4.27c.; No. 10 blue annealed sheets, 5.17c.; one-pass cold-rolled black sheets, No. 28 gage, 6.22c.; No. 28 galvanized sheets, 7.57c.; hoops, 4.57c.; bands, 3/16 in., Nos. 10 and 12, 4.57c.; shafting, plus 9 per cent off list.

**Cast-Iron Pipe.**—It is definitely stated that there will be no joint action by the cast-iron pipe people in regard to prices, but it is expected that considerably lower quotations will be made on public lettings as soon as any take place. At present there is neither public nor private business of importance pending. Recent Government prices which still prevail nominally are: \$67.70, New York, for 6-in. and heavier; \$70.70 for 4-in., \$77.70 for 3-in., and \$1 additional for Class A and gas pipe.

**Old Material.**—The market is weak and irregular and on some grades bottom has apparently been reached. On relaying rails high prices are still being named, which are entirely out of line with prices of new rails. No sales at the higher prices are, however, reported. We quote buying prices of dealers and brokers, per gross ton, New York, as follows:

Heavy melting steel.....	\$15.50 to \$16.00
Rebolling rails .....	18.00 to 19.00
Relaying rails .....	50.00 to 55.00
Iron and steel car axles .....	30.00 to 31.00
No. 1 railroad wrought.....	19.00 to 20.00
Wrought-iron track .....	15.00 to 16.00
Forge fire .....	14.00 to 15.00
No. 1 yard wrought, long.....	17.00 to 18.00
Light iron .....	6.00 to 7.00
Cast borings (clean).....	10.00 to 11.00
Machine shop turnings .....	8.00 to 9.00
Mixed borings and turnings.....	8.00 to 9.00
Iron and steel pipe (1 in. minimum diameter), not under 2 ft. long....	16.00 to 17.00
Stove plate .....	17.00 to 18.00
Locomotive grate bars.....	17.00 to 18.00
Malleable cast (railroad).....	16.00 to 17.00
Old carwheels .....	24.00 to 25.00
Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, are:	
No. 1 machinery cast.....	\$27.00 to \$28.00
No. 1 heavy cast (columns, building materials, etc.), cupola size.....	26.00 to 27.00
No. 1 heavy cast, not cupola size....	19.00 to 20.00
No. 2 cast (radiators, cast boilers, etc.) .....	17.00 to 18.00

The Andrews Engineering Co., Bessemer Building, Pittsburgh, recently chartered, has taken over the business of the Andrews Construction Co. The personnel remains the same.

## Cleveland

CLEVELAND, Jan. 14.

**Iron Ore.**—Ore on Lake Erie docks Jan. 1 amounted to 9,250,368 gross tons, or 1,007,581 tons less than on the same date a year ago when Lake Erie docks held 10,257,949 tons. Shipments to furnaces during December were 1,208,815 tons, being nearly all from stock piles, as receipts during the month amounted to only 123,399 tons. Shipments to furnaces during December, 1917, were 1,050,624 tons. So far nothing has developed to indicate an early ore buying movement. We quote delivered lower Lake ports, as follows:

Old range Bessemer, \$6.65; old range non-Bessemer, \$5.29; Mesaba Bessemer, \$6.40; Mesaba non-Bessemer, \$5.75

**Pig Iron.**—Pig iron producers are showing more of a tendency to revise contracts taken at the Government prices that prevailed last year to the new reduced prices. As announced last week, one Cleveland interest adopted the policy of readjusting contracts to the new price levels and some other producers are now making the readjustments by considering each case on its merits. In some cases, for example, when producers made shipments of iron on low priced contracts at the time high war-time prices were prevailing, taking their loss without complaint, they feel that consumers should take the loss of a declining market and are refusing to revise these contracts. Southern producers so far appear to be refusing to comply with revision requests. This matter will be the important topic that will be taken up for consideration at the meeting of the Central District of the American Pig Iron Association to be held in Pittsburgh Wednesday. The market, which has been practically stagnant for several weeks, is now showing a little life. There is some demand for small lots of foundry iron for prompt shipment and one inquiry for 2000 tons of foundry iron for early shipment. An inquiry came from Connecticut for 2000 tons of basic for shipment within 60 days, but this business is reported to have been placed with an Eastern furnace. Other inquiries for 200 tons of basic and 200 tons of Bessemer iron are reported. The first sales of silvery iron since the price readjustment are reported, a few small lots being taken at the \$3 a ton reduction in price. With the reduction in silvery all grades are now quoted at the new prices. We quote delivered Cleveland, as follows:

Bessemer .....	\$33.60
Basic .....	30.40
Northern No. 2 foundry.....	31.40
Southern No. 2 foundry, silicon, 2.25 to 2.75..	37.25
Gray forge .....	30.40
Ohio silvery, 8 per cent silicon.....	46.90
Standard low phosphorus, Valley furnace.....	51.00

**Coke.**—The coke market is inactive. Shipments are being made in good volume and foundries are well supplied. Practically all consumers are under contract for the first half.

**Alloy Steel.**—The demand for alloy steel is light and prices have declined sharply and are weak. Manufacturers of automobiles and automobile parts are buying very little material, generally only for their immediate requirements, and are getting back to their regular line of production more slowly than had been expected. This is attributed largely to the fact that so much of their capital is tied up in Government contracts that have not yet been adjusted. Central Western forge shops that supply the automobile trade are in need of orders. Alloy steel manufacturers have considerable stocks of ingots and billets which purchasers have instructed them to resell. The Government is expected to make good the difference between the contract price and resale price. Makers will try to dispose of the material at prices that will not demoralize the market. Open-hearth alloy steel bars are generally quoted at 6½c. to 6¾c. for low chrome nickel and about 7c. to 7½c. for 3½ per cent nickel and for chrome vanadium steel, but a much lower quotation has been made on low chrome nickel steel and prices on other grades are irregular.

**Tool Steel.**—One of the leading makers of high speed tool steel has reduced its price to \$1.50 base. A great deal of resale tool steel is being offered by muni-



\$2.28 to \$5.88, or 158 per cent. If efficiency has gone down only 15 per cent., this means that the wage cost has tripled. The value of a labor-saving device is correspondingly increased.

The first movement toward introduction of additional labor-saving machinery, on account of increased wage costs, is not likely to be on the part of those who are already in the forefront, in their respective lines of manufacture, in this matter of using labor-saving machinery. Rather it will be by those who have not progressed as far as their best positioned competitors. With an established and stable basis of wages and performance, a point is likely to be reached where there is a balance between the use or non-use of labor-saving equipment, whereby one manufacturer pays more in interest and upkeep on investment while the competitor saves this, but pays the money out in extra wages. When the general wage rate increases, the latter is placed at a disadvantage and must invest in more labor-saving machinery or submit to having a higher total cost than his competitor better equipped with labor-saving machinery.

An advantage the manufacturer with the less labor-saving machinery has had is that when a period of idleness comes along he can dispense with his labor and save the amount whereas his competitor's labor-saving machinery still represents an investment, against which there are interest charges. If it costs one-half more to do the thing by hand than by machinery, and the industry is idle one year out of three, the two manufacturers are really on equal terms after all. The comparison is suggestive, though not exact because so many things must be assumed to make a comparison.

In the average industry, there is always less introduction of labor-saving machinery than manufacturers desire, because they lack adequate capital. At the present time, most manufacturers find themselves with accumulated earnings, and as there is little disposition to increase production, the tendency will be to make investments that will reduce production costs.

### Restoring Stolen Machinery

The language of diplomacy is not noted for its frankness and plain language, but rather for its circumlocution and it is positively refreshing to read this paragraph in the official communication issued Monday after the adjournment of the Supreme War Council of the Peace Congress in Paris:

The meeting reached an agreement as to the terms on which the armistice is to be renewed on Jan. 17. This included naval clauses, financial clauses, conditions of supply and provision for the restitution of material and machinery stolen from France and Belgium by the Germans.

The above statement is a plain declaration of the truth that material and machinery were stolen in France and Belgium by the Germans. The word stolen is the only word in the English language that could truthfully be used. The machinery was taken from countless plants, transferred to Germany and there placed in operation,

and France and Belgium are now under a tremendous handicap, not only because large parts of their countries were devastated, but also because the machinery taken to Germany will give the Germans a decided advantage if it is allowed to remain where it is. The word restitution is also a good one, for it means the act of restoring or returning that which has been taken away. The Germans have intimated that it would be impossible for them to identify much of the machinery that was stolen and the French have replied that, if this is true, they will be willing to use for a time, at least, some machinery made in Germany. Every dictate of justice demands that there must be restitution of this stolen property.

Theodore Roosevelt, in the last editorial which he wrote, said: "It is a serious misfortune that our people are not getting a clear idea of what is happening on the other side." If the members of the Supreme Council continue to use as plain language as that quoted in the above paragraph, they will do much to clarify the situation and give the people of this country confidence that a just peace is to be established.

### Shop School as Trouble Remover

What the shop school has done for women it can do for men. Something of this sort has already been accomplished here and there, but there is much to do. There is no good reason why the newcomer to any industrial plant should have his mind considered less than his body. It has happened that a wise provision for lockers, or for ventilation, or for heating, has worked well toward elevating the shop spirit, but at the same time the reputation of the employer has suffered from the poison of malicious tongues. The threshold or vestibule school may be used to inform the new employee correctly and to do so without the loss of time that goes with that instruction when imparted by a neighboring workman. The danger from misleading information and the difficulty of checking error are great. A lie travels fast and far. Misstatements can be unintentional, and often no opportunities present themselves to make corrections.

A Hartford company not only uses the vestibule school for the usual technical instruction of its employees but sees to it that one of the very first things taught is what in too many shops filters wastefully from unofficial and irresponsible sources. In the building of a high-grade product there are ideals established, standards set and processes conducted with zealous skill and a devoted enterprise. In this adventure everyone has a part, no matter their place or prominence. Upon the success of their joint labors is determined the upbuilding of that product. Otherwise their lack of sympathetic understanding is reflected in the output. There is every reason that everybody be told all that should be known of the general objective.

So well has this thought been carried into effect at the plant mentioned that practically all operations are carefully laid down step by step and reduced to writing on cards. These are freely used as reminders, so that even the well-informed have

constantly before them a list of the several things in regular order that they are expected to do in their work.

The new workman too often feels himself a misfit. The whereabouts of things are unknown. Verbal instructions are not always accurately given or fully heard. At that, they are soon forgotten. In regaining the missing data, the time is lost of everybody involved. One particularly good feature of the shop school has been to give the new employee an easy familiarity with every detail of any job undertaken and an absolute independence of all assistance. There is a wonderful confidence when the person, stranger though he or she be to the department, is familiar with the work and knows how to do it in record time. That alone gives a gratification that none appreciate more than does a highly-skilled workman. One so fortunate in training can do much as an example, and the matter of preliminary instruction is all the more to be emphasized on that account.

Some peace-period orders have already come from France; for raw material, for machinery, for tools, etc. These are sufficiently substantial in themselves to forecast a larger flow of business once the internal affairs of the nations abroad settle down into normal lines of activity. A significant incident is the condition surrounding an order received by a Connecticut manufacturer of machine tools from a plant at the frontier longest under the German heel. The order covered a fresh outfit of the American product. The Belgian was perplexed but had no misgivings. Said he:

I don't know how I am going to get them here. At present I am not sure that they can come by way of Antwerp. It's not clear that they can come through France. But please go ahead on them, and by the time you have them ready for me I shall be able to send you the shipping instructions.

There is encouragement, to say the least, in the picture of the Belgian engineer who, amid the ruins of his plant and knowing not how relief will come, is nevertheless going confidently forward in the full assurance that in due season all will be well.

#### Philadelphia Branch for Walworth Manufacturing Co.

The Walworth Mfg. Co., with general offices at Boston, and works at Boston and Kewanee, Ill., and branches in New York, Chicago and Seattle, has recently purchased the business of the Hunter & Dickson Co. at 241-247 Arch Street, Philadelphia, and will operate it as one of its branches. The Hunter & Dickson Co. was founded in 1881. The business began in one room and basement, about 25 x 25 ft., at the present location. The sales were about \$50,000 the first year and the business steadily progressed until of late years it has amounted to several million annually.

The Walworth company can be called the pioneer in this country in the steam supply line. The purchase of the Kewanee Works of the National Tube Co. in 1917 by the Walworth Mfg. Co. greatly increased its production of valves and fittings for steam, water and gas work.

The Inland Steel Co., Chicago, has installed the Orth regenerator in its No. 3 open-hearth furnace, using tar fuel.

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#### Prices of Malleable Castings Are Irregular

The American Malleable Castings Association moved its headquarters in Cleveland during the past week and now occupies a suite of rooms in the Euclid Building, 1900 Euclid Avenue. This association, which has been holding monthly meetings in Chicago, has divided its membership into Eastern and Western sections and members in the Eastern section will hold a monthly meeting in New York the third Wednesday of each month. The first meeting was held this week at the Waldorf-Astoria, which will probably be the regular meeting place. The purpose of dividing the organization in two sections with separate meeting places is merely for the convenience of the members. It is not the intention to draw a definite geographical dividing line between the two sections, but members in the territory east of Cleveland will be regarded as coming in the territory of the Eastern section. The meetings in Chicago will be held the second Wednesday in each month as heretofore.

Malleable iron foundries report that a good volume of inquiries are coming out for castings, largely from the motor truck and tractor field. Following the cancellation of Government work which has left the foundries with a small volume of orders on hand, there has been a great deal of competition for business and prices are irregular. Most of the foundries have made concessions on the price of castings, corresponding to the \$3 per ton reduction in pig iron prices, but some of the foundries are going further than this in price cutting. Eastern malleable foundries are holding up prices better than those in the Central West.



# War Contracts Commission Proposed

Latest Plan for Solving Problem of Readjustment—Special Session of Congress May Be Called—Great Supply of Materials to Be Sold

WASHINGTON, Jan. 14.—After changing its mind three times, the Senate Committee on Military Affairs is now about to work out its fourth attempt to solve the problem of contract readjustments by agreeing upon a substitute for the Dent bill passed by the House of Representatives. The latest measure worked out by the members of the Senate committee is to provide for a special War Contracts Appeal Commission which is to have final jurisdiction over contract adjustments made by the Secretary of War but over which there may be further controversy.

The Dent bill was finally accepted by the House after the majority leader, James R. Mann, indorsed it, and thus aligned the minority with the majority. The House added some amendments, the most important of which was to make it cover contracts with foreign governments as well as domestic agreements. It now embraces the legalization of about 6600 contracts, and involves approximately \$2,700,000,000. But it leaves the final settlement exclusively in the hands of the Secretary of War.

Ten days ago the Senate Military Affairs Committee rejected the Dent bill unanimously because it gave too much power to the Secretary of War. It indorsed, instead, the Hitchcock measure putting all this power in the hands of a special commission. This started an energetic campaign on the part of Secretary Baker and Assistant Secretary Crowell, who succeeded in convincing the committee last Tuesday that it was all wrong, and that the Dent bill ought to be accepted. The committee agreed, and a couple of days later decided that the Dent bill needed a lot of amendments. Yesterday the Dent bill came over from the House and was sent to the Military Affairs Committee. Then the latter decided that the Dent bill could not be used, and worked out a new substitute providing for the appeals commission. Next it was discovered that the new substitute bill which had been brought to Washington by representatives of the Chamber of Commerce of the United States made no provision for the adjustment of formal contracts but only the informal contracts which it sought to validate. So another session of the committee was necessary to-day to attempt to make the final draft watertight and comprehensive.

The program now is to have the Senate press the committee's final bill to a hurried adoption and then to iron out the difficulties in conference. The measure provides for the appointment by the President of a special commission of three members—one from the Department of War, one from the Department of Justice, and one to represent the general business interests of the country. They are to receive \$10,000 a year each, and are to have jurisdiction over contract adjustments upon appeal either by the contractor or by the Department of Justice, if the latter believes that the Government interests have not been properly conserved. No provision is made for a Government appeal from the commission's award, but the contractor may accept 75 per cent of the commission's award in cash and prosecute an appeal for the modification of the remainder to the Court of Claims.

## May Have Special Session

The other item of legislation which is worrying business men generally is the War Revenue bill, which is making slow progress in conference. As a corollary to both there is still the question of the possibility of an extra session. A month ago the minority leaders seemed disinclined to force a special session. But that attitude is changing and the fact that Congress is far behind on all legislation, particularly revenue and appropriation legislation, makes it seem daily more likely that a special session will be necessary.

Another fact that must be considered is the absolute failure of Congress, or even of the administration, to attempt anything in the line of reconstruction legislation. The railroad problem is away up in the air, and the general difficulty of the labor situation, which is daily becoming more brittle, has received no response either from Congress or the Executive. This, coupled with the general chaos of the foreign situation, is making members of Congress a little more anxious to be on hand throughout the spring and summer. Even a small minority could force an extra session by blocking the more important appropriation bills, so that there is a decided temptation to the members who want to remain within striking distance of Washington instead of waiting until the regular session would ordinarily convene in December.

## Sales of Materials

While waiting for congressional action on the contract situation the War Department is making slow progress on the question of sales of surplus materials. C. W. Hare, the assistant director of munitions, has taken the place of Brig. Gen. C. C. Jamieson in charge of the general sales policy, but has made no further announcement concerning his program.

The Army Ordnance Department, however, has given out the following important statement concerning the procedure which it has adopted for the disposition of ordnance scrap material:

All surplus, unused, or obsolete construction and manufacturing materials, semi-finished and completed parts, miscellaneous supplies, etc., left over at time of cancellation or termination of ordnance contracts, or surplus at arsenals and supply depots will be ordered sold or stored as conditions require, by the subcommittee on sale of material of the Salvage Board. The actual sale of this material will be handled by the material branch of the Stores and Scrap Section of the Ordnance Department, through the district stores and scrap managers located in each district ordnance office.

Capt. Ralph C. Shaw, chief, Material Branch, located in group B, section 1, room 303, of the Ordnance building at Seventh and B streets, Washington, is compiling lists of the materials to be disposed of as promptly as these materials are reported for sale. Likewise, he is compiling lists of buyers of given classifications of materials. This information is being imparted to the district managers. Any Government agencies or others interested in the purchase of any materials having been or to be ordered sold by the Salvage Board should communicate with the Material Branch.

All scrap left over from the operation of ordnance contracts will be sold by the scrap branch of the Stores and Scrap Section, operating through the stores and scrap managers of the district ordnance offices. This scrap consists of different kinds of steel in sheets, billets and turnings, scrap steel parts, supranickel scrap, antimonial, lead dross, silk and cotton waste, burlap, spent acids, etc.

District representatives of the Stores and Scrap Section can give information as to scrap available. Likewise, Lieut. Schleck, chief, scrap branch, group B, section 1, room 305, will be glad to advise as to amount of scrap on hand at any point, price at which it is being held, etc. Likewise, he will be glad to receive names of Government agencies or other possible buyers of these materials.

Some idea of the enormous stocks of steel, machinery and engineering materials on hand in the War Department, but not in the possession of troops, is given in a special report made by the Statistical Division to Brig. Gen. R. E. Wood, acting quartermaster general and director of purchase and storage. This report covers stock at depots, camps and ports, and in transit to depots, camps and ports, as of Dec. 1, 1918. The statement follows:

STEEL PRODUCTS—Beams, 1166 tons; sheets, corrugated, 280,263 sheets; barge wire, 13,664 tons; plain wire,

736 tons; angle posts, 238,897; screw posts, 1592 tons; steel shelters, 3002; wire netting, 378 tons; steel tanks, water, gas, 1468 tons; steel plates, 245 tons; steel rope; hydrants, etc., 546 tons; miscellaneous, 6999 tons.

**MACHINERY**—Hoisting engines, 143; engines, 233; locomotive cranes, 58; steam shovels, 33; boilers, 276; concrete mixers, 166; derricks, 29; road rollers, 68; saw mills, 66; gantry cranes, 3601 tons; general machinery, miscellaneous, 6488 tons; shapers, 722 tons.

**TRACK MATERIAL AND FASTENINGS**—Rails, 42,855 tons; spikes, 3539 tons; bolts, 1875 tons; angle and splice bars, 1908 tons; turnouts and switches, 4374 tons; miscellaneous track material, 2378 tons.

**PIPE AND FITTINGS**—9444 tons.

**LOCOMOTIVES**, standard gage—Set up, complete, 139 knocked down, complete, 135; knocked down, incomplete, 5; spare parts, 100 tons.

**LOCOMOTIVES**, narrow gage—60 C. M. steam, 31; 60 C. M. 50 h.p., 1; 36-in. gage steam, 1.

**CARS**, standard gage—Box, complete, 858; high gondola, complete, 200; low gondola, complete, 500; flat artillery, complete, 12; tank, complete, 87; dump, complete, 2; ballast, complete, 152; refrigerator, complete, 350; box, incomplete, 100; high gondola, incomplete, 17; tank, incomplete, 18; refrigerator, 250.

**CARS**, narrow gage—Box, complete, 65; dump, 196; artillery trucks, complete, 100.

**MISCELLANEOUS**—Engineer supplies, 1771 tons; paint, oils, turpentine and painter supplies, 942 tons; electrical material, 772 tons; roofing paper and felt, 69,138 rolls; wall board, 638 tons; copper wire, 1030 tons; carbide, 1014 tons; floating derrick, 77 tons.

**WAGON TRANSPORTATION**—Limber and caisson, 210; dump, 155; tool spring, 179; chess, 590; ponton, 449; brown type, 89; escort, 45; autos, trucks, trailers, tractors, 6; explosives, 984 tons; lumber, 11,785,284 feet.

The War Department also has given out the following interesting figures of the comparative total production of machine guns, rifles and ammunition made in the United States, Great Britain and France between April 6, 1917, and Nov. 11, 1918:

*Total Production April 6, 1917, to Nov. 11, 1918*

<b>Machine Guns and Machine Rifles:</b>	
Great Britain .....	181,404
France .....	229,238
United States .....	181,662
<b>Rifles:</b>	
Great Britain .....	1,971,764
France .....	1,416,056
United States .....	2,506,742
<b>Rifle and Machine Gun Ammunition:</b>	
Great Britain .....	3,486,127,000
France .....	2,983,675,000
United States .....	2,879,148,000

The sharp ascendancy in American production, however, is revealed by the following table of the average monthly rate of production in July, August and September, 1918, when our industries reached their highest speed:

*Average Monthly Rate, July, August and September, 1918*

<b>Machine Guns and Machine Rifles:</b>	
Great Britain .....	10,947
France .....	12,126
United States .....	27,270
<b>Rifles:</b>	
Great Britain .....	112,821
France .....	40,522
United States .....	233,562
<b>Rifle and Machine Gun Ammunition:</b>	
Great Britain .....	259,769,000
France .....	139,845,000
United States .....	277,894,000

A meeting of the standardization committee of the American Gear Manufacturers' Association was held at the Hotel Statler, Buffalo, Jan. 13 and 14. One of the main objects of the organization of this association is to standardize size of gears, and this committee has this work in charge.

The Crucible Steel Co. of America shut down its Atha works at Harrison, N. J., last Saturday on account of cancellation of Government contracts, but will resume operations gradually on its regular line of special steels and tool steel. The Atha works during the war was largely engaged in making gun forgings.

## TO SERVE INDUSTRIES

### Plan for Co-operation Is Announced by Department of Commerce

WASHINGTON, Jan. 14.—The Department of Commerce has announced the organization of the Industrial Co-operation Service to continue the work done during the war by the Conservation Division of the War Industries Board. The work of this division is to be entirely voluntary so far as the industries are concerned and without any element of compulsion. The same is true of the Waste Reclamation Service of the department which has taken over the War Prison Labor and Waste Reclamation Service of the Labor Division of the War Industries Board. Both of these organizations will be housed temporarily in the building heretofore occupied by the War Industries Board and the Council of National Defense.

The most important feature of the new Industrial Co-operation Service is the list of "unofficial commercial advisers" who are to participate in its operations. Most of these men were members of the War Industries Board or heads of divisions. The list, with the industries represented by each, follows:

W. B. Dickson, steel; Samuel P. Bush, forgings; George N. Peek, agricultural implements; Pope Yeatman, non-ferrous metals; A. W. Shaw, former chairman Conservation Division, War Industries Board; Edwin B. Parker, former priorities commissioner, War Industries Board; George R. James, former chief, cotton and cotton linters, secretary, War Industries Board; Thomas E. Donnelly, pulp and paper; James Inglis, cotton baling and transportation; Charles H. MacDowell, chemicals; Thomas C. Powell, railroad transportation; William M. Ritter, lumber; Walter Robbins, electricity; John W. Scott, textiles, and C. F. C. Stout, hides and leather.

Representatives of other industries have been asked to participate.

Former Chairman Shaw of the Conservation Division of the War Industries Board is supervising the transfer of the work of that division to the new organization, of which John Cutter is the acting chief. Hugh Frayne, former chairman of the Labor Division of the War Industries Board, is similarly supervising the reorganization of the Waste Reclamation Service.

"It is the purpose of the Department of Commerce," says the official announcement, "through both of these important services to keep in close touch with the industries and under its organic law, which calls upon it to foster, promote and develop the industries of the country, to assist them in every practicable way. The services now created from the activities of the War Industries Board will permit greatly enlarged usefulness to the commerce of the country.

"The Bureau of Foreign and Domestic Commerce has long actively promoted the interests of our commerce abroad; the Bureau of Standards is affording, with greatly extended facilities created during the war, that scientific support to all industries which has been the basis upon which Germany so successfully built her commerce before the war. The Industrial Co-operation Service dealing with problems of commercial standardization, of the saving of industrial wastes, of greater effectiveness in production and sale, in the removal of hurtful and uneconomical trade practices, will substantially complete the cycle of helpfulness and with the Waste Reclamation Service will form a rounded whole of aid to commerce, especially needed in the present days of readjustment and in the future days of competition to follow."

Europe has the same problems of turning its war machinery into the machinery of peace. The French Government has decided to convert its Munitions Department—also known as the Armament Department—into a Department of Industrial Reconstitution. On this subject a special report sent by Commercial Attache Pierce C. Williams at Paris says that M. Loucheur, who has been the Minister of Armament, will retain the directorship of the new department.



# Iron and Steel Markets

## A FEATURELESS WEEK

### Operations on Slightly Larger Scale But Surplus of Labor Developing

#### Foundry Products Lower and Scrap Softer—British Ferromanganese to Be Admitted

An incomplete analysis indicates that the aggregate of peace-time buying is larger than generally supposed. No attempt is made to express it in figures, but in spite of good shipments in December the bookings on Jan. 1 were probably less than 10 per cent below those of Dec. 1. Mills have meanwhile worked into the backlog which is usually so desirable for an efficient operating regime. Generally the producer describes conditions as better than expected. The trade has been so long used to full steam activity that it is not yet accustomed to the present period of low demand.

With operations not quite so good as a week ago, it is to be expected that reports are numerous of plant shutdowns. The industry cannot, of course, expect 60 per cent operation and not have idleness. A surplus of labor has already become apparent at steel works, with offers to work at lower than existing wage schedules.

The December estimated output of steel ingots, 2,992,306 tons, is, with the same number of working days, only 2 per cent less than the November production and there was no noticeable stocking of the rolled product, a fact which is favorable.

Concentration on export probabilities still serve to accentuate the unfavorable differences in ocean freight charges as between this country and England. American billets have been quoted at \$50 per ton, f.a.s., while the British established export price is £13 10s. Thus the vessel freight rate difference needs to be within \$14 per ton for the United States to participate. American steel bars have been offered at about \$72.50 alongside ship, or about \$20 per ton lower than the British product. Through reductions in ocean freights recently made on American ships the handicap has been lessened, but on shipments to the Far East charges from New York are roughly three to three and one-half times those from Liverpool.

Inquiries of a promising nature are appearing from Belgium, though likely for British negotiation. Fresh export inquiries here include 3000 tons of light rails and 1500 tons of ties for portable tracks, and one of 500 tons of standard rails for Spain.

Another step in the abolition of the zoning system of making pig iron prices has been taken by some of the Virginia furnaces, which have started to quote at their furnaces instead of on the Birmingham basis. The outlook is that the last vestige of the plan adopted Oct. 1 will soon disappear, if competition becomes severe. The makers of charcoal iron still hold out against reducing prices. On other grades, the \$3 reduction is general as to new business.

The drop in prices has been accepted in spots

in the foundry trade, as instanced by a 25 per cent cut by radiator makers and some recessions in malleable casting prices. Guidance in respect to prices on old contracts is expected from a meeting of pig iron producers in Pittsburgh on Jan. 15.

The scrap market is very weak, with prices tending downward, but dealers believe the bottom is about reached. The large quantity of war scrap which must eventually reach the markets must be considered in predicting the future course of the market.

Late returns of iron and steel tonnage exports, 448,716 gross tons for November, 1918, show a decrease of only 5 per cent from November, 1917, but 15 per cent more than October, 1918. Barbed wire, required for the fighting front, dropped from 29,311 tons in October to 23,190 tons in November. In steel plates the month's outgo was 56,846 gross tons, or 3879 tons less than in October.

From 25,000 to 27,000 tons of British standard 80 per cent ferromanganese, which was sold prior to the entrance of the United States into the war, may now be imported, most of it at \$164 to \$185 per ton, seaboard. The present asking price for domestic 70 per cent alloy is \$225, delivered.

The re-establishment of the Chicago basing for finished steel is again being agitated. Although it existed by Presidential proclamation for the nine months ended July 1, 1918, producers generally fought against recognizing it on private purchases and now that the Government is not the heavy buyer and mill outputs are not allocated, they may be expected again to resist the change.

## Pittsburgh

PITTSBURGH, Jan. 14—(By Wire).

In a little over a month the labor situation has reversed itself, and at present there seems to be a larger supply of labor than can find steady work. The other day at a Valley blast furnace there were close to 75 laborers, who had lost positions, seeking employment at other works. At a northside manufacturing plant last week a number of men applied for work and agreed to work for \$3 a day for ordinary labor, but were turned away, as the plant had all the men it could use. These are straws which show very conclusively that the supply of labor is now more than ample for all needs. If this goes on, and it no doubt will, it may reach the point shortly where labor will agree to work for much lower than present rates rather than remain idle. At Youngstown this week there are more men walking the streets with nothing to do than in two years. Several of the large steel plants there are down to about a 50 per cent basis, and have simply told their men there will be no work for them till more orders are received that will warrant starting up these idle plants.

The Carnegie Steel Co. has mapped out a large relining campaign for its blast furnaces, and it is understood this company expects to have four or five blast furnaces out right along for relining. For two years or more blast furnaces have been driven at a very high rate, and owing to the abnormal demand for pig iron many stacks have been nursed along and kept in blast that under ordinary conditions would have gone out months ago. There has been a let-up in operations of tin plate mills, most of which are not working over 11

## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Jan. 14, 1919	Jan. 7, 1919	Dec. 17, 1918	Jan. 16, 1918
No. 2 X, Philadelphia ....	\$36.15	\$36.15	\$39.15	\$34.25
No. 2, Valley furnace.....	31.00	31.00	34.00	33.00
No. 2, Southern, Cin'tl....	34.60	34.60	37.60	35.90
No. 2, Birmingham, Ala....	31.00	31.00	34.00	33.00
No. 2, furnace, Chicago*....	31.00	31.00	34.00	33.00
Basic, del'd, eastern Pa....	33.90	33.90	36.90	33.75
Basic, Valley furnace.....	30.00	30.00	33.00	33.00
Bessemer, Pittsburgh.....	33.60	33.60	36.60	37.25
Malleable, Chicago*.....	31.50	31.50	34.50	33.50
Malleable Valley.....	31.50	31.50	34.50	33.50
Gray forge, Pittsburgh....	31.40	31.40	34.40	32.75
L. S. charcoal, Chicago....	38.85	38.85	38.85	37.50

### Rails, Billets, etc.,

Per Gross Ton:	Jan. 14, 1919	Jan. 7, 1919	Dec. 17, 1918	Jan. 16, 1918
Bess. rails, heavy, at mill..	55.00	55.00	55.00	55.00
O.-h. rails, heavy, at mill..	57.00	57.00	57.00	57.00
Bess. billets, Pittsburgh....	43.50	43.50	43.50	47.50
O.-h. billets, Pittsburgh....	43.50	43.50	43.50	47.50
O.-h. sheet bars, Pittsburgh	47.00	47.00	47.00	51.00
Forging billets, base, P'gh.	56.00	56.00	60.00	60.00
O.-h. billets, Phila.....	47.30	47.30	51.30	50.50
Wire rods, Pittsburgh.....	57.00	57.00	57.00	57.00

### Finished Iron and Steel, Per Lb. to Large Buyers:

	Cents	Cents	Cents	Cents
Common iron bars, Phila...	3.145	3.145	3.745	3.685
Common iron bars, P'gh....	2.90	2.90	3.50	3.50
Common iron bars, Chicago	3.17	3.17	3.50	3.50
Steel bars, Pittsburgh.....	2.70	2.70	2.70	2.90
Steel bars, New York.....	2.97	2.97	2.97	3.095
Tank plates, Pittsburgh....	3.00	3.00	3.00	3.25
Tank plates, New York.....	3.27	3.27	3.27	3.445
Beams, etc., Pittsburgh....	2.80	2.80	2.80	3.00
Beams, etc., New York.....	3.07	3.07	3.07	3.195
Skelp, grooved steel, P'gh..	2.70	2.70	2.70	2.90
Skelp, sheared steel, P'gh..	3.00	3.00	3.00	3.25
Steel hoops, Pittsburgh....	3.30	3.30	3.30	3.50

\*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Sheets, Nails and Wire,	Jan. 14, 1919	Jan. 7, 1919	Dec. 17, 1918	Jan. 16, 1918
Per Lb. to Large Buyers: Cents	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	4.70	4.70	4.70	5.00
Sheets, galv., No. 28, P'gh.	6.05	6.05	6.05	6.25
Wire nails, Pittsburgh....	3.50	3.50	3.50	3.50
Cut nails, Pittsburgh.....	5.00	5.00	5.00	4.00
Fence wire, base, P'gh....	3.25	3.25	3.25	3.25
Barbed wire, galv., P'gh..	4.35	4.35	4.35	4.35

### Old Material,

Per Gross Ton:	Jan. 14, 1919	Jan. 7, 1919	Dec. 17, 1918	Jan. 16, 1918
Carwheels, Chicago.....	26.00	26.00	27.00	30.00
Carwheels, Philadelphia...	25.00	25.00	29.00	30.00
Heavy steel scrap, P'gh....	20.00	20.00	25.00	30.00
Heavy steel scrap, Phila...	18.00	18.00	25.00	30.00
Heavy steel scrap, Ch'go...	16.50	18.00	23.00	30.00
No. 1 cast, Pittsburgh....	25.00	25.00	27.00	30.00
No. 1 cast, Philadelphia...	24.00	24.00	29.00	30.00
No. 1 cast, Ch'go (net ton)..	22.00	24.00	26.00	26.00
No. 1 RR. wrot, Phila....	23.00	25.00	32.00	35.00
No. 1 RR. wrot, C'go (net)	18.50	21.50	25.00	31.25

### Coke, Connellsville,

Per Net Ton at Oven:	Jan. 14, 1919	Jan. 7, 1919	Dec. 17, 1918	Jan. 16, 1918
Furnace coke, prompt....	\$6.00	\$6.00	\$6.00	\$6.00
Furnace coke, future.....	6.00	6.00	6.00	6.00
Foundry coke, prompt....	7.00	7.00	7.00	7.00
Foundry coke, future.....	7.00	7.00	7.00	7.00

### Metals,

Per Lb. to Large Buyers: Cents	Cents	Cents	Cents
Lake copper, New York...	20.50	21.00	26.00
Electrolytic copper, N. Y..	20.50	21.00	26.00
Spelter, St. Louis.....	7.25	7.50	8.15
Spelter, New York.....	7.60	7.85	8.50
Lead, St. Louis.....	5.50	5.45	6.40
Lead, New York.....	5.75	5.75	6.75
Tin, New York.....	71.50	71.50	72.00
Antimony (Asiatic), N. Y.	7.75	7.62 1/2	8.00
Tin plate, 100-lb. box, P'gh.	\$7.35	\$7.35	\$7.35

or 12 turns per week, instead of the 16 turns, when the demand for tinplate was so heavy.

The recent advance of 7½ per cent in wages of sheet mill labor for January and February in mills that have signed the Amalgamated scale, was a surprise to the trade, which expected a reduction of wages, in view of the lower prices on sheets. The advance is explained by the fact that wages for January and February are based on average prices on shipments of sheets in November and December, and that average price was higher than it will be for January and February.

The demand for finished steel products in the past week has shown some betterment, notably in sheets and tinplate, but on most lines is still quiet and confined to actual needs. Jobbers' stocks on nearly all kinds of finished steel are fairly heavy, and they are placing orders only for such quantities of material as are needed to make their stocks complete. The opinion in the trade is that present quiet conditions are likely to last over the next three or four months, but with the return of favorable weather, allowing outside operations again, a material increase in demand for steel is expected. Mills point to present very high costs and say that on most lines of finished steel very much lower prices than are ruling now need not be expected. With the cost of about \$30 per ton to most merchant furnaces for making basic and foundry iron, if prices should go lower, it will mean a good many furnaces will have to stop. It is said that in the wire trade present prices do not allow any profit on wire and wire nails, owing to the very high cost of labor and material. Unless demand soon improves there is bound to be a further slowing down of operations among blast furnaces, steel works and finishing mills and if there is any material decline in price some companies state they will simply close down until labor and other costs come down to a point that will allow them to compete. The outlook is for a quiet condition in the steel trade at least until April.

**Pig Iron.**—Press reports of an active foreign inquiry for pig iron are not verified and are believed to be incorrect. Local pig iron interests state they have not received any foreign inquiry for pig iron of any moment since the armistice was signed. They point out that the fact that some of the foreign countries that have bought pig iron in this country before the war will be engaged over the next six months or a year in rehabilitating their cities and providing the necessities of life for their people. The work of active reconstruction in these countries is not likely to start for a considerable time. The local pig iron market is quiet in demand, the only active inquiry out being from the Colonial Steel Co., which is figuring on the purchase of 3,000 to 5,000 tons of basic for delivery in first half. If this iron is placed it is likely to be taken at a lower price than \$30 per ton, the recognized price at Valley furnace. There is a little inquiry for foundry iron and we note sales of 1,000 to 1,200 tons in small lots at \$31, Valley furnace. More blast furnaces in the Pittsburgh, Mahoning and Shenango valleys are now idle for relining and repairs than at any time for two years. Owners of blast furnaces are taking advantage of the present dull demand to put their stacks out and have them in good shape for long runs when the demand for pig iron is heavier than it is now. Some Valley furnaces report they are pretty well sold up over first half, and their customers are taking the iron out at a satisfactory rate. No large buying movement in pig iron is looked for till the demand for finished steel is materially better.

Basic pig iron, \$30; Bessemer, \$32.20; gray forge, \$30; No. 2 foundry, \$31; No. 3 foundry, \$30.50, and malleable \$31.50, all per gross ton at Valley furnace, the freight rate for delivery in the Cleveland and Pittsburgh district being \$1.40 per ton.

**Ferroalloys.**—Very little is being done in the local market in the way of sales of ferroalloys, consumers being covered through first half of this year, and in



some cases are offering various kinds of ferroalloys for resale. One Youngstown interest was offering in this market last week a considerable quantity of ferrosilicon for resale, but without finding a buyer. Consumers believe that prices on ferroalloys may be lower, and they are content to work their stocks off before placing any new orders. The outlook is that the supply of ferromanganese and other alloys will be amply large to meet all needs.

We quote 70 per cent ferromanganese at \$225, delivered, and 16 to 18 per cent spiegeleisen, \$65, f.o.b. furnace, an addition or deduction of \$3.50 per unit being made, when the manganese content is above or below the standard. Fifty per cent ferrosilicon is quoted at \$125.

We quote 9 per cent Bessemer ferrosilicon at \$52; 10 per cent, \$54; 11 per cent, \$57.30; 12 per cent, \$60.60. We quote 6 per cent silvery iron, \$39; 7 per cent, \$40; 8 per cent, \$42.50; 9 per cent, \$44.50; 10 per cent, \$47. Three dollars per gross ton advance for each 1 per cent silicon for 11 per cent and over. All the above prices are f.o.b. maker's furnace, Jackson or New Straitsville, Ohio, these furnaces having a uniform freight rate of \$2.90 per gross ton, for delivery in the Pittsburgh district.

**Billets and Sheet Bars.**—The inquiry for billets and sheet bars is quiet and consumption of steel by the sheet and tin plate mills is less now than at any time in the past two years. This week the Bessemer plant and Brown-Bonnell finishing mills of Republic Iron & Steel Co. at Youngstown are down for lack of orders. Other steel plants in the Youngstown, Wheeling and Pittsburgh districts are operating to only about 60 per cent. The Government is offering a good deal of steel for resale in the forms of shell steel, bars and forgings, which no doubt could be bought at prices a good deal lower than the recognized market on billets and sheet bars. Consumers are holding shipments of billets and sheet bars to some extent, as their slower rate of operation does not allow them to take in the full quantity named in their contracts.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at \$43.50, sheet bars \$47, slabs \$46, and forging billets \$56 base, all f.o.b. at mill, Pittsburgh or Youngstown.

**Structural Material.**—Some new work came out in the past week, but the outlook for the next three or four months is not very bright. It is understood that the new terminal and Union Station at Cleveland has been authorized by the authorities in that city, and it is estimated this work will require ultimately about 50,000 tons. Bids went in last week on a section of the New York Elevated System for 16,000 tons, but the award has not yet been made. The American Bridge Co. is understood to have taken 23,000 tons for the new armor plate plant near Charleston, W. Va., and the McClintic-Marshall Co. has taken 400 tons of bridge work in Havana, Cuba. The Pennsylvania Railroad has inquiries out for about 900 tons of steel for signal bridges, turntables and other repair work. Railroads are buying only such quantities of structural steel as are actually needed. It is understood that most fabricating shops are not operating to more than about 60 per cent of capacity, and a few are running at a less rate.

We quote beams and channels up to 15 in. at 2.80c. at mill, Pittsburgh.

**Plates.**—If the determination of the Government to carry out its shipbuilding program goes through plate mills expect to have a heavy business for a long time. At present little new work is being placed and the steel car shops are getting slack. It is believed that in a short time large contracts will come from the Government for plates for its shipbuilding program, but this is not certain. It is said that nearly all contracts for plates made last year on which shipments are still due consumers have been readjusted by the mills to the basis of present prices.

We quote sheared plates at 3c., Pittsburgh mill.

**Iron and Steel Bars.**—The fact that Western makers of bar iron have fixed their price on the basis of 2.90c., Pittsburgh, plus the freight to Chicago, has unsettled the local market to some extent. Demand for both iron and steel bars is quiet, and some of the mills are getting very short of work. The demand for reinforcing bars for concrete work has been very dull for some time.

We quote soft steel bars rolled from billets at 2.70c.; from old steel rails, 2.80c.; common iron bars, 2.90c.; bar

iron rolled from selected scrap, 3.65c.; and refined iron bars at 4.40c. at mill, Pittsburgh.

**Sheets.**—A leading interest in the sheet trade reports it has live orders on its books for enough tonnage to take its output over the next two months or longer, and some of the other mills report a similar condition. The rate of operation among sheet mills is now running from 70 to 80 per cent, the lower figure probably being very close to the average. Jobbers are buying a little more freely, but only in such quantities as will make their stocks complete. The opinion is pretty general that present prices on sheets may not be minimum later on, and both jobbers and consumers are buying cautiously. The supply of sheet bars is good, and none of the mills is suffering for lack of steel. Prices on sheets are given in detail on page 217.

**Tin Plate.**—Leading can makers and other large consumers of tin plate carried over very heavy stocks into this year, and as a result are not expected to come in the market for some time for their supply of tin plate this year, or until these stocks have been pretty well worked up. This explains why so few contracts for tin plate the first half of the year have so far been made. One leading interest reports that very few of its smaller customers have sent in contracts for their supply of tin plate the first half, but this is not general. There is a fair demand for small lots and operations among the tin plate mills are slightly better, probably averaging about 70 per cent. There is some foreign inquiry, but very little foreign business is being placed. We quote tin plate at \$7.35 per base box for domestic trade f.o.b. Pittsburgh. Prices on terne plate are given in detail on page 217.

**Wire Rods.**—Makers report the export inquiries for rods as being heavier than from the domestic trade. One local interest reports having made recently three or four fairly large sales of soft rods for export, at somewhat higher prices than are quoted for domestic. Operations of the mills rolling rods are lighter than for some time. Plenty of steel is available, but orders are scarce. Prices in rods are given in detail on page 217.

**Wire Products.**—There is a good deal of dissatisfaction among the independent mills over the new discounts on woven wire fencing which on some gages mean a reduction of as much as \$6.40 a ton, while on other gages the new discounts mean slight advances. It was understood, when the general committee of the American Iron and Steel Institute recommended that no reduction in price on wire products be made, that this would be carried out, but shortly after one leading interest issued the new discounts on woven wire fencing and other makers had to follow suit. It is claimed that present prices on nearly all kinds of wire and also wire nails do not allow a fair margin of profit. The demand is only fair, and most shipments now being made by the mills are on old orders placed last year. None of the wire and wire nail mills is operating to more than 70 to 75 per cent of capacity and the amount of business ahead on their books is relatively small. It is said the present prices on wire and wire nails are being firmly held, but here and there reports are received that prices are being shaded.

**Hot-Rolled Strip Steel.**—The demand is only fair, nearly all shipments now being made by the mills being on old orders placed last year, on which makers have readjusted prices to the present basis.

We quote hot rolled strip steel, as made by hoop and band mills, at 3.30c. per lb., while for deep stamping or drawing quality steel, 50c. per lb. extra is charged, all f.o.b. Pittsburgh.

**Cold-Rolled Strip Steel.**—Buying is light and is coming nearly entirely from the automobile trade. Jobbers' stocks are fairly heavy and they are buying only in such quantities as are needed to round out their stocks.

We quote cold-rolled strip steel at \$6.25 base per 100 lb., f.o.b. Pittsburgh, for 1½-in. and wider, 0.100 in. and thicker, hard temper in coils under 0.20 carbon. Boxing charge 25c. per 100 lb.

**Shafting and Screw Stock.**—All the makers have adopted a new list of extras on shafting. The demand is quiet and none of the shafting makers is operating to more than 50 to 60 per cent of capacity. Jobbers' stocks are fairly large and they are buying only such

quantities as are needed to give them a complete assortment of sizes.

We quote cold-rolled shafting at 20 per cent off list in carloads and 16 per cent in less than carloads, f.o.b. Pittsburgh.

**Bolts, Nuts and Rivets.**—Makers report a fair demand, but mostly in small lots that cover current needs. Jobbers and consumers seem to feel that present prices on nuts and bolts will not be minimum later on, and are placing orders only as actual needs require. This is always the dull season in the nut and bolt trade, and makers refer to the present demand as being about as heavy as usual at this season of the year. Discounts on nuts, bolts and rivets to the large trade are given on page 217.

**Spikes.**—The demand is quiet, railroads placing orders for only small quantities of spikes needed for repair work. Later on, it is expected there will be a good deal of new track laying, for which large quantities of spikes will be needed. Makers report the demand for small spikes is very quiet.

We quote standard spikes 9/16 x 4 1/2 in. at \$3.65 and small spikes at the same price in carload lots of 200 kegs or more at \$3.65 per 100 lb., plus usual extras. We quote boat spikes at \$5.00 base per 100 lb. plus usual extras, in carload lots of 200 kegs or more, all f.o.b. Pittsburgh.

**Rivets.**—The demand is dull as very little work in which rivets are used is under way at present. Jobbers' stocks are reported fairly heavy and they are not buying very freely.

We quote button head structural rivets at \$4.40 and cone head boiler rivets at \$4.50 base, f.o.b. Pittsburgh.

**Hoops and Bands.**—Demand is dull, and shipments now being made by the mills are mostly on old orders placed last week, on which makers have adjusted prices to the present basis.

We quote steel hoops and bands at 3.30c. base, with the usual extras.

**Skelp.**—The market is very quiet, the demand being dull, with most mills rolling skelp operating to only 60 per cent of capacity.

We quote grooved skelp at \$2.65, universal skelp \$3.00 base. Special skelp for boiler tubes, etc., is \$3.15 for bases size and \$3.30 for other sizes, all these prices being per 100 lb., f.o.b. Pittsburgh.

**Coke.**—It is the expectation of most coke makers that the Government will cease having supervision over prices on coke on Feb. 1, and as to what trend prices will have after that date is uncertain. Unless there is a material increase in output of blast furnace coke in the near future, it would not be surprising if prices on both furnace and foundry coke go higher than they are now. The demand for furnace coke is heavy and in the past month some stacks have had to bank waiting for coke to arrive. No contracts are being made for either furnace or foundry coke, as the future of prices is so uncertain. The output of coke in the upper and lower Connellsville regions for the week ending Jan. 4, was 253,980 tons, an increase over the previous week of 21,790 tons. Now that the holiday season is over, it is believed the output of coke will soon materially increase. At present, it is running fully 75,000 tons less than normal. Government prices still in effect are as follows:

We quote 48 hr. beehive blast furnace coke at \$6; 72 hr. beehive foundry coke at \$7 and crushed coke over 3/4 in. at \$7.30, all in tons of 2000 lb. at oven. We quote by-product coke at \$5.70 for run of ovens and \$6.70 for selected foundry in all States but Alabama and Washington. To these base prices should be added the freight rate from the competing beehive coke district which takes the lowest freight rates to the point where such by-product coke is produced, except that there shall be added for coke manufactured in New England 7c. for each 5c. above 60c. in the freight charges per ton (2240 lb.) of coal for water transportation on the coal used in the manufacture of such coke.

**Wrought Pipe.**—The Cosden & Co. interests, large operators in the Texas oil fields, have an active inquiry out for about 300 miles of 8-in. line pipe, to be laid from the new ranger oil fields in Texas to Tulsa, Okla., where the refineries of this company are located. This pipe runs about 29 lb. to the foot and, if the order is placed, will amount to close to 25,000 tons. Other interests operating in the ranger oil fields in Texas, notably the Texas Co., Standard Oil Co., and Gulf Refining Co., are reported to have inquiries out for considerable quantities of line pipe, which are expected to be placed in the near future. Mills expect a heavy demand during this year for line pipe for gas and oil lines, very little work of this kind having been done in 1918, as the mills were working largely on Government orders, and it was impossible for oil or gas interests to get deliveries of line pipe. The demand for lapweld sizes of pipe is reported fairly heavy, but for butt-weld sizes is dull, owing to building operations all over the country being so quiet. As a rule, iron and steel pipe mills are operating to about 75 per cent of capacity. Discounts on iron and steel pipe, effective from Jan. 1, are given on page 217.

**Boiler Tubes.**—The demand is very quiet, and shipments now being made by the mills, on both iron and steel tubes, are mostly on orders placed last year, prices on which have been adjusted to the new basis of discount as adopted on Jan. 1. Discounts on iron and steel tubes are given on page 217.

**Old Material.**—There has been no improvement in the demand for scrap, which has been very dull for the past two months, partly owing to steadily declining prices, but more largely because stocks of scrap held by consumers are very heavy, and they seem content to pretty well work these off before doing any buying. It is said that fairly large quantities of both borings and turnings for blast furnace use have been bought lately by pig iron interests at about \$12 per gross ton delivered. Large quantities of shell steel discards and other forms of semi-finished steel are being offered in this market by our own Government, and also by the Canadian Government, at prices fully as low as heavy melting steel. This has served to demoralize the local scrap market to a considerable extent. No sales of moment in scrap were made in the past week and prices are only fairly steady, and are largely nominal, as not enough scrap material is being sold to establish market prices. We quote largely nominally as follows:

Heavy steel melting, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, delivered .....	\$20.00 to \$21.00
No. 1 cast, for steel plants (nominal) .....	25.00 to 26.00
Rerolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Franklin, Pa., and Pittsburgh (nominal) .....	25.00 to 26.00
Compressed steel .....	18.00 to 19.00
Bundled sheet, sides and ends, f.o.b. consumers' mills, Pittsburgh district (nominal) .....	16.00 to 17.00
Bundled sheet stamping (nominal) .....	15.00 to 16.00
Railroad grata bars (nominal) .....	17.00 to 18.00
Low phosphorus melting stock .....	24.00 to 25.00
Iron car axles (nominal) .....	42.00 to 43.00
Locomotive axles, steel (nominal) .....	45.00 to 46.00
Steel car axles (nominal) .....	42.00 to 43.00
Railroad malleable (nominal) .....	22.00 to 23.00
Machine shop turnings .....	12.00 to 13.00
Cast iron wheels .....	26.00 to 27.00
Rolled steel wheels (nominal) .....	22.00 to 23.00
Sheet bar crop ends (at origin) (nominal) .....	30.00 to 31.00
Heavy steel axle turnings (nominal) .....	14.50 to 15.00
Heavy breakable cast .....	25.00 to 26.00
Cast iron borings .....	16.00 to 17.00
No. 1 railroad wrought .....	28.00 to 29.00

### French Government Honors American Steel Manufacturers

The French Government, wishing to show its gratitude to Americans who during the war rendered distinguished service to the cause of France and the Allies, has announced a number of promotions and nominations in the Legion of Honor.

Charles M. Schwab is to receive the Cross of Chevalier, and among the knights created are:

Richard G. Wood, president Alan Wood Iron & Steel Co.

James A. Farrell, president United States Steel Corporation.

E. P. Thomas, president United States Steel Products Co.

Samuel M. Vauclain, vice-president Baldwin Locomotive Works.

Joseph Clendenin, vice-president American Smelting & Refining Co.

J. A. Campbell, president Youngstown Sheet & Tube Co.



## Chicago

CHICAGO, Jan. 13 (By Wire.)

The general aspect of the market is one of quiet, but prices are firmly held and consumers are showing more of a disposition to do business. The principal company among the steel producers finds specifications surprisingly good. The producers of pig iron continue in a quandary as to what prices are to apply to old contracts, but guidance is expected to come from a meeting to be held in Pittsburgh Jan. 15. Meanwhile there is no new business. A large Southern producer has notified its agents that contracts are to stand as written. The entire trade is very much at sea.

Once again a movement is on foot to have Chicago re-established as a basing point, the demand this time springing from Western fabricators, tank makers and other consumers. The president of the Illinois Manufacturers' Association has appointed a committee which is to arrange for a conference between steel producers and consumers. Prominent steel men, as heretofore, see no advantage to be derived from the plan so far as the steel trade is concerned, though they admit an advantage would accrue to the consumers. They say Eastern mills do not desire to pay freight to Chicago on their products, while the local mills do not wish to relinquish the augmented price which the freight represents when prices are fixed on a Pittsburgh basis, and they say an old established trade custom cannot be easily laid aside.

Further declines are shown in old material, which bring the bottom near.

**Pig Iron.**—Several uncertainties must be smoothed out before the pig iron trade can proceed in a manner at all approaching normal. At the moment there is a great lack of unanimity in procedure, but a betterment may follow a meeting to be held Jan. 15 at Pittsburgh. Much needed, apparently, is strong leadership in revising contracts on the new \$31 base. A large Southern merchant producer has notified its agents that contracts are to be carried out as originally written, this meaning that some consumers will have the benefit of a low silicon differential, while others who contracted more recently will have to pay the higher differential which was in effect at the close of the year. Meanwhile several of the companies are invoicing at the last Government maximum price. It is quite generally agreed that Southern high-cost furnaces can hardly thrive on the \$31 base, one of their troubles being intrastate freight rates on coal, lime, etc., which add between \$2 and \$2.50 to their costs. There is no new business at any price.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace, and do not include a switching charge averaging 50c. per ton:

Lake Superior charcoal, Nos. 2 to 5.....	\$38.70 to \$39.00
Lake Superior charcoal, C to AA.....	40.70 to 42.50
Lake Superior charcoal, No. 6.....	41.20 to 41.50
Northern coke foundry, No. 1 silicon, 2.25 to 2.75 .....	32.25
Northern coke foundry, No. 2 silicon, 1.75 to 2.25 .....	31.00
Northern high-phosphorus foundry.....	31.00
Southern coke, No. 1 foundry and No. 1 soft silicon, 2.75 to 3.25.....	39.00
Southern coke, No. 2 foundry, silicon, 2.25 to 2.75 .....	37.25
Southern foundry, silicon, 1.75 to 2.25.....	36.00
Malleable, not over 2.25 silicon.....	31.50
Basic .....	30.00
Low phosphorus (copper free).....	52.50
Silvery, 7 per cent.....	50.00

**Ferroalloys.**—No business whatever is reported. While the nominal quotation for 70 per cent ferromanganese is \$225 delivered, it is admitted that a lower price would not be spurned, but there are no offers.

We quote 70 per cent ferromanganese nominal at \$225 delivered; 50 per cent ferrosilicon at \$155 to \$162.50, delivered, and 16 to 18 per cent spiegeleisen at \$65 furnace.

**Structural Material.**—There are many inquiries, but the bulk of them are small, and largely represent efforts to buy from the mills instead of from jobbers. The Omaha Structural Steel Co. will fabricate 408 tons for a power house to be erected for Armour & Co. at South Omaha, Neb. The Wisconsin Bridge Co. will sup-

ply 104 tons to the Chicago, St. Paul, Minneapolis & Omaha Railroad for a girder bridge at Minneapolis. The Atlantic Coast Line is asking for bids on 300 underframes.

The mill quotation is 2.80c., Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery. Jobbers quote 4.07c. for material out of warehouse.

**Plates.**—Some large inquiries for plates are said to exist, but they are developing slowly. Meanwhile there is a fair demand for small lots wanted for tanks and general work, including cars, and a little is being sold for export.

The mill quotation is 3c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers quote 4.27c. for plates out of stock.

**Bars.**—The mills are receiving a fair aggregate of orders for mild steel bars, and specifications are good. The demand for concrete reinforcing material also is fair. Iron bars are quiet. For common bar iron the quotation of 2.90c. stands.

Mill prices are: Mild steel bars, 2.70c., Pittsburgh, taking a freight rate of 27c. per 100 lb.; common bar iron, 2.90c., Pittsburgh; refined iron bars, 3.65 to 4.40c.; rail carbon, 2.80c., Pittsburgh.

**Sheets.**—The market is slowly becoming more active. Jobbers have indicated their readiness to buy, but they continue to look for guarantees against declines, something the mills are not willing to grant. It is pointed out that such a course would supply an incentive for the jobbers to cast about for lower prices or offers, on finding which they would ask that their contract price be revised.

Chicago delivery out of stock regardless of quantity. No. 10 blue annealed, 5.17c.; No. 28 black, 6.22c., and No. 28 galvanized, 7.57c.

Mill quotations are 4.70c. for No. 28 black, 3.95c. for No. 10 blue annealed, and 6.05c. for No. 28 galvanized.

**Wire Products.**—Except in a few lines such as flat wire, a much better business was done in the last week, although inventories are not yet concluded. Wire makers, like sheet makers, are not disposed to give guarantees against declines.

**Old Material.**—Business is restricted to the taking of occasional bargains in which extremely low prices are made. It is believed the attitude of the Government as to what is has to sell, and what it gets, will have important bearing, while the status of the mills in regard to supply is an unknown factor. Several railroads have issued lists and the aggregate tonnage they offer is fairly large.

We quote for delivery in buyers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Iron rails .....	\$28.00 to \$29.00
Relaying rails .....	50.00 to 55.00
Carwheels .....	26.00 to 27.00
Steel rails, rerolling.....	22.00 to 23.00
Steel rails, less than 5 ft.....	22.00 to 23.00
Heavy, melting steel.....	16.50 to 17.00
Frogs, switches and guards, cut apart.....	16.50 to 17.00
Shoveling steel .....	16.50 to 17.00
Heavy steel axle turnings.....	14.00 to 15.00

### Per Net Ton

Iron angles and splice bars.....	\$24.00 to \$25.00
Steel angle bars.....	19.50 to 20.50
Iron arch bars and transoms.....	27.50 to 28.00
Iron car axles .....	31.00 to 32.00
Steel car axles.....	27.00 to 28.00
No. 1 railroad wrought.....	18.50 to 19.50
No. 2 railroad wrought.....	17.00 to 18.00
Cut forge .....	19.50 to 20.50
Pipes and flues.....	15.00 to 16.00
No. 1 busheling .....	16.50 to 17.00
No. 2 busheling .....	10.00 to 11.00
Steel knuckles and couplers.....	22.50 to 23.00
Coil springs .....	23.00 to 24.00
No. 1 cast.....	22.00 to 23.00
Boiler punchings .....	24.00 to 25.00
Locomotive tires, smooth.....	25.00 to 26.00
Machine-shop turnings .....	8.50 to 9.00
Cast borings .....	10.50 to 11.50
Stove plate and light cast.....	17.00 to 17.50
Grate bars .....	16.00 to 16.50
Brake shoes .....	16.00 to 16.50
Railroad malleable .....	17.00 to 18.00
Agricultural malleable .....	18.00 to 19.00
Country mixed .....	12.00 to 13.00

**Cast-Iron Pipe.**—Detroit will take bids Jan. 14 on 2000 tons, this being the only business reported.

We quote per net ton, f.o.b. Chicago, ex-war tax, as follows: Water pipe, 4-in., \$69.80; 6-in. and larger, \$66.80; class A and gas pipe, \$1 extra.

**Bolts and Nuts.**—Prices are unchanged, and orders are few and small, indicating a waiting attitude on the

part of consumers. For mill prices see Finished Iron and Steel, f.o.b. Pittsburgh, page 217. Jobbers quote:

Structural rivets, 5.67c.; boiler rivets, 5.77c.; machine bolts up to  $\frac{3}{4}$  x 4 in., 40 per cent off; larger sizes 25 and 5 off; carriage bolts up to  $\frac{3}{4}$  x 6 in., 35 off; larger sizes, 20 and 5 off; box pressed nuts, square topped, 78c. off; hexagon tapped, 58c. off; coach or lag screws, gimlet points, square heads, 40 per cent off. Quantity extras for nuts are canceled.

**Rail and Track Supplies.**—Inquiries for track fastenings continue the feature of this market.

Standard railroad spikes, 3.65c., Pittsburgh. Track bolts, with square nuts, 4.90c., Pittsburgh. Tie plates, steel, 3c., Pittsburgh and Chicago; tie plates, iron, 3.30c., f.o.b. maker's mills. The base for light rails is 3c., f.o.b. maker's mill, with usual extras.

## Philadelphia

PHILADELPHIA, Jan. 14.

Readjustment policies are not yet fully worked out, and meanwhile trade is waiting. Practically the only business being done in pig iron, steel or scrap is small lots for prompt shipment. The market is barren of interesting developments, neither export nor domestic business showing as yet any signs of increasing demand.

Consumers of pig iron are insistently urging revision of prices on old contracts, but the furnaces are resisting such revision when contracts specifically read that the "last-named Government price" was to apply on deliveries made after the withdrawal of Government prices. A few furnaces have revised all contracts to the basis of \$30 for basic and \$31 for No. 2 foundry iron, while others are still quoting \$3 a ton higher, and some spot business in lots up to 200 tons has been done the past week at the higher quotations. Virginia producers have decided to abandon the Birmingham basing, and will sell f.o.b. furnace, but for the present will adhere to the base price of \$34 for foundry iron. Small sales have been made, which with the freight rate to Philadelphia of \$4.10 makes the delivered price in this market \$38.10, as compared with \$34.90 for the same grade of iron from eastern Pennsylvania furnaces.

The scrap market is weaker, prices showing a further downward tendency, but dealers believe the bottom is about reached. Demand is light and some consumers have ordered suspension of shipments on contracts.

Eastern bar iron makers have not yet taken any action toward reducing prices, but it is admitted that a reduction will be made soon. Meanwhile a few orders are being accepted subject to revision if the price is lowered.

**Pig Iron.**—Neither consumers nor producers are in a mood to negotiate pig iron business, except small lots for prompt shipment. Consumers are to a large extent well supplied, both as to stock on hand and under contract, while sellers are in an equally independent position, being, with rare exceptions, well sold ahead. Consequently they are taking a conservative attitude as to future business so as not to unduly disturb present market prices. A good sized tonnage of iron might be procurable at lower than existing quotations, but in the absence of any such buying interest, producers will go slow about taking any action which would tend to start prices downward. Virginia producers two weeks ago indicated that they would continue to sell on a Birmingham base, but would reduce prices \$3 a ton. Since then, they have changed their position and several lots of foundry iron have been sold in the past week on the basis of \$34, furnace, making the delivered price \$38.10, Philadelphia, and we accordingly adjust our quotations to that basis. Eastern Pennsylvania and Buffalo furnaces are selling small lots at a price which makes its delivered cost in Philadelphia \$34.90, while basic has been sold at \$33.90, Philadelphia. No concessions from these prices are apparent at the moment, though consumers seem generally of the opinion that quotations will eventually go lower. Sellers, however, see the situation as a rather strong light, but the decline is such that the manufacturer in other quarters as indicated that the manufacturer

perhaps not so marked, for pig iron. Consumers are insistently urging revision of prices on contracts, which in numerous instances is being done. In a few cases, a compromise reduction of \$1.50 has seemingly satisfied the consumer. Some sellers go so far as to say that practically all contracts must eventually be revised, the alternative being legal action, which both parties generally wish to avoid. We quote standard grades of iron for delivery in Philadelphia or vicinity except standard low phosphorus, which is quoted f.o.b. furnace:

Eastern Pennsylvania No. 2 X (2.25 to 2.75 sil.)	\$36.15
Eastern Pennsylvania No. 2 foundry (1.75 to 2.25 sil.)	34.90
Virginia No. 2 X (2.25 to 2.75 sil.)	39.35
Virginia No. 2 foundry (1.75 to 2.25 sil.)	38.10
Basic	33.90
Gray forge	33.90
Standard low phosphorus, f.o.b. furnace	51.00
Copper-bearing low phosphorus	48.90

**Ferroalloys.**—The market is dead, consumers showing no interest. A leading producer of ferromanganese has two of its four furnaces out of blast. Consumers are trying to cancel contracts, but producers object. Several legal actions to test these contracts are in prospect. Ferromanganese is nominally quoted at \$225 for 70 per cent and spiegeleisen at \$65 for 16 to 18 per cent.

**Billets.**—No business is being done. Considerable resale material is available, much of it of shell-forging quality, but consumers are showing no interest. We quote open-hearth rerolling billets at \$47.30, Philadelphia.

**Finished Iron and Steel.**—Only a small volume of business is being done, mainly replenishing orders. Shipyards have large stocks of plates and shapes on hand. The British Government is offering to sell plates, shapes, bars and other steel products, which were ready for shipment when the armistice was signed, but the prices at which the material is held are, according to brokers, too high to move it in the present condition of the market. Steel production is showing an average reduction of perhaps 25 or 30 per cent. Two plants are operating at about 50 per cent, while others vary from 70 to 100 per cent. Several small bar iron rolling mills have shut down because of lack of orders. Common merchant iron is being nominally quoted at 3.50c., Pittsburgh, but no business is being done except where the seller agrees to protect the customer on price declines. A few small sales have been made on this basis. A New York broker has offered bar iron in this district at 2.90c., Pittsburgh. Export demand is not large, being mainly from South America. Business with Japan is held back because of the failure of more than 300 metal brokers in that country since the armistice was signed. Plates in the hands of speculators in Japan had gone as high as 35c. per lb. and many brokers suffered large losses. High ocean freight rates are making it very difficult, if not impossible, to do business with Europe and the Far East. Prices for export and domestic trade are now identical in most instances. We quote plates at \$3.245c., structural shapes at 3.045c., soft steel bars at 2.945c., bar iron at 3.745c., No. 10 blue annealed sheets at 4.145c., No. 28 black sheets at 4.945c., and No. 28 galvanized sheets at 6.295c., all Philadelphia.

**Old Material.**—Demand from consumers is not large, but a few sales are being made. Prices tend downward, but dealers believe the bottom is about reached and that buying interest would stiffen the market. The large quantity of war material which will some time reach the market as scrap is, however, unquestionably a factor with which to reckon in predicting the future course of the market. It is apparent that the supply of scrap released by the ending of the war will prevent any shortage for a long time to come and this may have a tendency to hold prices to relatively low levels despite any active demand which may develop. It is expected that the Government will release its war scrap gradually so as not to depress the market unduly, but no definite policy has yet been worked out. Much of the Government scrap must be sorted, graded and prepared in scrap yards, and the way in which it is absorbed by consumers will depend to a considerable



## Chicago

CHICAGO, Jan. 13 (By Wire.)

The general aspect of the market is one of quiet, but prices are firmly held and consumers are showing more of a disposition to do business. The principal company among the steel producers finds specifications surprisingly good. The producers of pig iron continue in a quandary as to what prices are to apply to old contracts, but guidance is expected to come from a meeting to be held in Pittsburgh Jan. 15. Meanwhile there is no new business. A large Southern producer has notified its agents that contracts are to stand as written. The entire trade is very much at sea.

Once again a movement is on foot to have Chicago re-established as a basing point, the demand this time springing from Western fabricators, tank makers and other consumers. The president of the Illinois Manufacturers' Association has appointed a committee which is to arrange for a conference between steel producers and consumers. Prominent steel men, as heretofore, see no advantage to be derived from the plan so far as the steel trade is concerned, though they admit an advantage would accrue to the consumers. They say Eastern mills do not desire to pay freight to Chicago on their products, while the local mills do not wish to relinquish the augmented price which the freight represents when prices are fixed on a Pittsburgh basis, and they say an old established trade custom cannot be easily laid aside.

Further declines are shown in old material, which bring the bottom near.

**Pig Iron.**—Several uncertainties must be smoothed out before the pig iron trade can proceed in a manner at all approaching normal. At the moment there is a great lack of unanimity in procedure, but a betterment may follow a meeting to be held Jan. 15 at Pittsburgh. Much needed, apparently, is strong leadership in revising contracts on the new \$31 base. A large Southern merchant producer has notified its agents that contracts are to be carried out as originally written, this meaning that some consumers will have the benefit of a low silicon differential, while others who contracted more recently will have to pay the higher differential which was in effect at the close of the year. Meanwhile several of the companies are invoicing at the last Government maximum price. It is quite generally agreed that Southern high-cost furnaces can hardly thrive on the \$31 base, one of their troubles being intrastate freight rates on coal, lime, etc., which add between \$2 and \$2.50 to their costs. There is no new business at any price.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace, and do not include a switching charge averaging 50c. per ton:

Lake Superior charcoal, Nos. 2 to 5...	\$38.70 to \$39.00
Lake Superior charcoal, C to AA...	40.70 to 42.50
Lake Superior charcoal, No. 6...	41.20 to 41.50
Northern coke foundry, No. 1 silicon, 2.25 to 2.75	32.25
Northern coke foundry, No. 2 silicon, 1.75 to 2.25	31.00
Northern high-phosphorus foundry	31.00
Southern coke, No. 1 foundry and No. 1 soft silicon, 2.75 to 3.25	39.00
Southern coke, No. 2 foundry, silicon, 2.25 to 2.75	37.25
Southern foundry, silicon, 1.75 to 2.25	36.00
Malleable, not over 2.25 silicon	31.50
Basic	30.00
Low phosphorus (copper free)	52.50
Silvery, 7 per cent.	50.00

**Ferroalloys.**—No business whatever is reported. While the nominal quotation for 70 per cent ferromanganese is \$225 delivered, it is admitted that a lower price would not be spurned, but there are no offers.

We quote 70 per cent ferromanganese nominal at \$225 delivered; 50 per cent ferrosilicon at \$155 to \$162.50, delivered, and 16 to 18 per cent spiegeleisen at \$65 furnace.

**Structural Material.**—There are many inquiries, but the bulk of them are small, and largely represent efforts to buy from the mills instead of from jobbers. The Omaha Structural Steel Co. will fabricate 408 tons for a power house to be erected for Armour & Co. at South Omaha, Neb. The Wisconsin Bridge Co. will sup-

ply 104 tons to the Chicago, St. Paul, Minneapolis & Omaha Railroad for a girder bridge at Minneapolis. The Atlantic Coast Line is asking for bids on 300 underframes.

The mill quotation is 2.80c., Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery. Jobbers quote 4.07c. for material out of warehouse.

**Plates.**—Some large inquiries for plates are said to exist, but they are developing slowly. Meanwhile there is a fair demand for small lots wanted for tanks and general work, including cars, and a little is being sold for export.

The mill quotation is 3c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers quote 4.27c. for plates out of stock.

**Bars.**—The mills are receiving a fair aggregate of orders for mild steel bars, and specifications are good. The demand for concrete reinforcing material also is fair. Iron bars are quiet. For common bar iron the quotation of 2.90c. stands.

Mill prices are: Mild steel bars, 2.70c., Pittsburgh, taking a freight rate of 27c. per 100 lb.; common bar iron, 2.90c., Pittsburgh; refined iron bars, 3.65 to 4.40c.; rail carbon, 2.80c., Pittsburgh.

**Sheets.**—The market is slowly becoming more active. Jobbers have indicated their readiness to buy, but they continue to look for guarantees against declines, something the mills are not willing to grant. It is pointed out that such a course would supply an incentive for the jobbers to cast about for lower prices or offers, on finding which they would ask that their contract price be revised.

Chicago delivery out of stock regardless of quantity, No. 10 blue annealed, 5.17c.; No. 28 black, 6.22c., and No. 28 galvanized, 7.57c.

Mill quotations are 4.70c. for No. 28 black, 3.95c. for No. 10 blue annealed, and 6.05c. for No. 28 galvanized.

**Wire Products.**—Except in a few lines such as flat wire, a much better business was done in the last week, although inventories are not yet concluded. Wire makers, like sheet makers, are not disposed to give guarantees against declines.

**Old Material.**—Business is restricted to the taking of occasional bargains in which extremely low prices are made. It is believed the attitude of the Government as to what is has to sell, and what it gets, will have important bearing, while the status of the mills in regard to supply is an unknown factor. Several railroads have issued lists and the aggregate tonnage they offer is fairly large.

We quote for delivery in buyers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Iron rails	\$28.00 to \$29.00
Relaying rails	50.00 to 55.00
Carwheels	26.00 to 27.00
Steel rails, rerolling	22.00 to 23.00
Steel rails, less than 5 ft.	22.00 to 23.00
Heavy melting steel	16.50 to 17.00
Frogs, switches and guards, cut apart	16.50 to 17.00
Shoveling steel	16.50 to 17.00
Heavy steel axle turnings	14.00 to 15.00

### Per Net Ton

Iron angles and splice bars	\$24.00 to \$25.00
Steel angle bars	19.50 to 20.50
Iron arch bars and transoms	27.50 to 28.00
Iron car axles	31.00 to 32.00
Steel car axles	27.00 to 28.00
No. 1 railroad wrought	18.50 to 19.50
No. 2 railroad wrought	17.00 to 18.00
Cut forge	19.50 to 20.50
Pipes and flues	15.00 to 16.00
No. 1 busheling	16.50 to 17.00
No. 2 busheling	10.00 to 11.00
Steel knuckles and couplers	22.50 to 23.00
Coil springs	23.00 to 24.00
No. 1 cast	22.00 to 23.00
Boiler punchings	24.00 to 25.00
Locomotive tires, smooth	25.00 to 26.00
Machine-shop turnings	8.50 to 9.00
Cast borings	10.50 to 11.50
Stove plate and light cast	17.00 to 17.50
Grate bars	16.00 to 16.50
Brake shoes	16.00 to 16.50
Railroad malleable	17.00 to 18.00
Agricultural malleable	18.00 to 19.00
Country mixed	12.00 to 13.00

**Cast-Iron Pipe.**—Detroit will take bids Jan. 14 on 2000 tons, this being the only business reported.

We quote per net ton, f.o.b. Chicago, ex-war tax, as follows: Water pipe, 4-in., \$69.80; 6-in. and larger, \$66.80; class A and gas pipe, \$1 extra.

**Bolts and Nuts.**—Prices are unchanged, and orders are few and small, indicating a waiting attitude on the

part of consumers. For mill prices see Finished Iron and Steel, f.o.b. Pittsburgh, page 217. Jobbers quote:

Structural rivets, 5.67c.; boiler rivets, 5.77c.; machine bolts up to  $\frac{1}{2}$  x 4 in., 40 per cent off; larger sizes 25 and 5 off; carriage bolts up to  $\frac{1}{2}$  x 6 in., 35 off; larger sizes, 20 and 5 off; box pressed nuts, square topped, 78c. off; hexagon tapped, 58c. off; coach or lag screws, gimlet points, square heads, 40 per cent off. Quantity extras for nuts are canceled.

**Rail and Track Supplies.**—Inquiries for track fastenings continue the feature of this market.

Standard railroad spikes, 3.65c., Pittsburgh. Track bolts, with square nuts, 4.90c., Pittsburgh. Tie plates, steel, 3c., Pittsburgh and Chicago; tie plates, iron, 3.30c., f.o.b. maker's mills. The base for light rails is 3c., f.o.b. maker's mill, with usual extras.

## Philadelphia

PHILADELPHIA, Jan. 14.

Readjustment policies are not yet fully worked out, and meanwhile trade is waiting. Practically the only business being done in pig iron, steel or scrap is small lots for prompt shipment. The market is barren of interesting developments, neither export nor domestic business showing as yet any signs of increasing demand.

Consumers of pig iron are insistently urging revision of prices on old contracts, but the furnaces are resisting such revision when contracts specifically read that the "last-named Government price" was to apply on deliveries made after the withdrawal of Government prices. A few furnaces have revised all contracts to the basis of \$30 for basic and \$31 for No. 2 foundry iron, while others are still quoting \$3 a ton higher, and some spot business in lots up to 200 tons has been done the past week at the higher quotations. Virginia producers have decided to abandon the Birmingham basing, and will sell f.o.b. furnace, but for the present will adhere to the base price of \$34 for foundry iron. Small sales have been made, which with the freight rate to Philadelphia of \$4.10 makes the delivered price in this market \$38.10, as compared with \$34.90 for the same grade of iron from eastern Pennsylvania furnaces.

The scrap market is weaker, prices showing a further downward tendency, but dealers believe the bottom is about reached. Demand is light and some consumers have ordered suspension of shipments on contracts.

Eastern bar iron makers have not yet taken any action toward reducing prices, but it is admitted that a reduction will be made soon. Meanwhile a few orders are being accepted subject to revision if the price is lowered.

**Pig Iron.**—Neither consumers nor producers are in a mood to negotiate pig iron business, except small lots for prompt shipment. Consumers are to a large extent well supplied, both as to stock on hand and under contract, while sellers are in an equally independent position, being, with rare exceptions, well sold ahead. Consequently they are taking a conservative attitude as to future business so as not to unduly disturb present market prices. A good sized tonnage of iron might be procurable at lower than existing quotations, but in the absence of any such buying interest, producers will go slow about taking any action which would tend to start prices downward. Virginia producers two weeks ago indicated that they would continue to sell on a Birmingham base, but would reduce prices \$3 a ton. Since then, they have changed their position and several lots of foundry iron have been sold in the past week on the basis of \$34, furnace, making the delivered price \$38.10, Philadelphia, and we accordingly adjust our quotations to that basis. Eastern Pennsylvania and Buffalo furnaces are selling small lots at a price which makes its delivered cost in Philadelphia \$34.90, while basic has been sold at \$33.90, Philadelphia. No concessions from these prices are apparent at the moment, though consumers seem generally of the opinion that quotations will eventually go lower. Sellers, however, see the situation in a rather strong light, but the declines in other quarters as indicated in other parts of the market.

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Eastern Pennsylvania No. 2 X (2.25 to 2.75 sil.)	\$36.15
Eastern Pennsylvania No. 2 foundry (1.75 to 2.25 sil.)	34.90
Virginia No. 2 X (2.25 to 2.75 sil.)	39.35
Virginia No. 2 foundry (1.75 to 2.25 sil.)	38.10
Basic	33.90
Gray forge	33.90
Standard low phosphorus, f.o.b. furnace	51.00
Copper-bearing low phosphorus	48.90

**Ferroalloys.**—The market is dead, consumers showing no interest. A leading producer of ferromanganese has two of its four furnaces out of blast. Consumers are trying to cancel contracts, but producers object. Several legal actions to test these contracts are in prospect. Ferromanganese is nominally quoted at \$225 for 70 per cent and spiegeleisen at \$65 for 16 to 18 per cent.

**Billets.**—No business is being done. Considerable resale material is available, much of it of shell-forging quality, but consumers are showing no interest. We quote open-hearth rerolling billets at \$47.30, Philadelphia.

**Finished Iron and Steel.**—Only a small volume of business is being done, mainly replenishing orders. Shipyards have large stocks of plates and shapes on hand. The British Government is offering to sell plates, shapes, bars and other steel products, which were ready for shipment when the armistice was signed, but the prices at which the material is held are, according to brokers, too high to move it in the present condition of the market. Steel production is showing an average reduction of perhaps 25 or 30 per cent. Two plants are operating at about 50 per cent, while others vary from 70 to 100 per cent. Several small bar iron rolling mills have shut down because of lack of orders. Common merchant iron is being nominally quoted at 3.50c., Pittsburgh, but no business is being done except where the seller agrees to protect the customer on price declines. A few small sales have been made on this basis. A New York broker has offered bar iron in this district at 2.90c., Pittsburgh. Export demand is not large, being mainly from South America. Business with Japan is held back because of the failure of more than 300 metal brokers in that country since the armistice was signed. Plates in the hands of speculators in Japan had gone as high as 35c. per lb. and many brokers suffered large losses. High ocean freight rates are making it very difficult, if not impossible, to do business with Europe and the Far East. Prices for export and domestic trade are now identical in most instances. We quote plates at \$3.245c., structural shapes at 3.045c., soft steel bars at 2.945c., bar iron at 3.745c., No. 10 blue annealed sheets at 4.145c., No. 28 black sheets at 4.945c., and No. 28 galvanized sheets at 6.295c., all Philadelphia.

**Old Material.**—Demand from consumers is not large, but a few sales are being made. Prices tend downward, but dealers believe the bottom is about reached and that buying interest would stiffen the market. The large quantity of war material which will some time reach the market as scrap is, however, unquestionably a factor with which to reckon in predicting the future course of the market. It is apparent that the supply of scrap released by the ending of the war will prevent any shortage for a long time to come and this may have a tendency to hold prices to relatively low levels despite any active demand which may develop. It is expected that the Government will release its war scrap gradually so as not to depress the market unduly, but no definite policy has yet been worked out. Much of the Government scrap must be sorted, graded and prepared in scrap yards, and the way in which it is absorbed by consumers will depend to a considerable



degree on the capacity of yards to handle it. Several Eastern mills have ordered suspension of shipments on contracts, being already oversupplied and this has further weakened the market. We quote as follows for delivery at consumers' works in the Philadelphia district:

No. 1 heavy melting steel.....	\$18.00 to \$20.00
Steel rails, rerolling.....	23.00 to 25.00
No. 1 low phosphorus, heavy, 0.04 and under .....	24.00 to 26.00
Iron rails .....	30.00 to 32.00
Carwheels .....	25.00 to 26.00
No. 1 railroad wrought.....	24.00 to 25.00
No. 1 yard wrought.....	22.00 to 24.00
Country yard wrought.....	14.00 to 15.00
No. 1 forge fire.....	17.00 to 19.00
Bundled skeleton .....	17.00 to 19.00
No. 1 busheling .....	18.00 to 19.00
No. 2 busheling .....	14.00 to 15.00
Turnings (for blast furnace use)....	10.00 to 12.00
Machine-shop turnings (for rolling mill use) .....	12.00 to 13.00
Cast borings (for blast furnace use) ..	10.00 to 12.00
Cast borings (clean).....	15.00 to 16.00
No. 1 cast.....	24.00 to 25.00
Grate bars .....	18.00 to 20.00
Stove plate .....	18.00 to 20.00
Railroad malleable .....	18.00 to 20.00
Wrought iron and soft steel pipes and tubes (new specifications).....	18.00 to 20.00
Ungraded pipe .....	14.00 to 16.00

## Buffalo

BUFFALO, Jan. 13.

**Pig Iron.**—Producers report a noticeable improvement in the market the past week, with some increase in inquiry and a brighter outlook. Basic in particular shows a better demand than for several weeks. A more united stand appears to have been taken by the furnace interests of the district, and practically all have now written down their contracts to meet the suggestions and the spirit of the committee of the American Iron and Steel Institute with respect to price reduction from the Government schedule formerly ruling—i. e., a base price of \$31 for 1.75 to 2.25 per cent silicon content, applying where contracts carry Government clauses. This action, however, does not involve contracts of any kind entered at a definite price with no exemption clauses whether above or below the Government basis of prices as applied in the past. Inquiry does not embrace any large tonnages, being principally for small lots, averaging 250 tons. Some melters are requesting that delayed deliveries be hurried forward. These delayed tonnages consist in some instances of iron on war contracts which furnaces declined to cancel, but on which they were willing to defer delivery for later specification. Some foreign inquiry is before the market, including one small lot of about 500 tons of foundry for Japan and one of a much larger tonnage for the same country. The price schedule on new business is quoted the same as a week ago, f.o.b. furnace, Buffalo:

No. 1 foundry, 2.75 to 3.25 silicon.....	\$34.00
No. 2 X, 2.25 to 2.75 silicon.....	32.25
No. 3 foundry, 1.75 to 2.25 silicon.....	31.00
Gray forge .....	30.00
Malleable silicon not over 2.25.....	31.50
Basic .....	30.00
Bessemer .....	32.20
Lake Superior charcoal, regular grades, f.o.b. Buffalo .....	38.50

**Finished Iron and Steel.**—While there has not been a great deal of buying, a considerable tonnage of various finished products, bars, small shapes, etc., that has been under suspension, has been released with sizes changed to meet present requirements, so that mills are in better condition than they have been for several weeks in that tonnage on books is live tonnage, against which shipments are moving forward. There is a fair demand for shapes. One mill reports that it is putting through some good orders. The plate market, although not showing much activity at the present moment, has picked up somewhat since the first of the year, with indications that the situation will improve in the near future.

**Old Material.**—The market is still characterized by lack of activity and an almost entire absence of buying. Most consumers have considerable stocks of material

on hand, and under present conditions have not yet reached a point where they are interested in buying. Scrap dealers, however, and some mills also, believe that the time is not so very far off when a buying movement will be likely to set in. The only commodity to show the least signs of life at present is cast borings, and transactions have been very few in this line. Considerable quantities of shell billets left over on Government contracts remain to be absorbed by the market, and it is a puzzling question as to how they will be disposed of. Shipments of these billets which have been made to Canadian interests working on American shell contracts, or which have been stopped in transit into Canada, are likely to be thrown on the market here, with no demand for them, as mills appear to be absolutely out of the market for melting steel. It is expected that all local shell contracts will have been completed by the end of the present month. The current price schedule is largely nominal. We quote as follows per gross ton, f.o.b. Buffalo:

Heavy melting steel, regular grades.....	\$17.00 to \$18.00
Low phosphorus, 0.04 and under.....	23.00 to 24.00
No. 1 railroad wrought.....	23.00 to 24.00
No. 1 machinery cast.....	25.00 to 26.00
Iron axles .....	27.00 to 28.00
Steel axles .....	27.00 to 28.00
Car wheels .....	25.00 to 26.00
Railroad malleable .....	25.00 to 26.00
Machine shop turnings.....	10.00 to 11.00
Heavy axle turnings.....	15.00 to 16.00
Clean cast borings.....	14.00 to 15.00
Iron rails .....	24.00 to 25.00
Locomotive grate bars.....	21.00 to 22.00
Stove plate .....	21.00 to 22.00
Wrought pipe .....	15.00 to 16.00
No. 1 busheling.....	16.00 to 17.00
Bundled sheet stamping.....	15.00 to 16.00

## Birmingham

BIRMINGHAM, ALA., Jan. 13.

**Pig Iron.**—There has been no change in the Southern iron market with regard to the attitude of the independent iron masters, who, with one accord, are asking \$34 and have declined thus far to book under that level. The only business going has been small lots, largely for prompt delivery. That has brought \$34 uniformly. One lot of 100 tons of high silicon sold at \$39.50, the precise price set by the Government in the \$34 scale. Other lots, from carload to 100 tons, of which showing was made, were booked at the \$34 level. Onlookers, including consumers, believe the attitude with regard to the higher price on current business is with a view as much to hold that price on iron already booked as to get it on new bookings. In other words, the consumers believe the furnace men feel that a lower price on forward business would jeopardize that price on iron already booked. So, up to that point where order books begin to cry for new business, and to the extent of their ability to do so, the independents will probably stick to \$34. Production is at a low ebb owing to the slump in coal and coke following a two weeks' holiday. The decrease of over 400,000 tons below even the reduced average of the past autumn hit hard. The Tennessee company blew out No. 3 at Bessemer for relining on Dec. 30. This was on basic. On the same day it banked No. 4 at Bessemer, on basic, for want of coke, and banked its Alice in Birmingham, on basic. On Jan. 7 it banked No. 1 Bessemer, on foundry, and on Jan. 8 blew out Little Belle at Bessemer, which was on ferromanganese. The Woodward Iron Co. blew out a Woodward stack, but will blow in a Vanderbilt that has just been relined. The only business going being at \$34, we quote per gross ton, f.o.b. Birmingham district furnaces, for prompt delivery, as follows:

No. 2 foundry and soft.....	\$34.00
Basic .....	33.00

**Cast-Iron Pipe.**—There has been no improvement in the cast-iron pipe trade. The leading interest is operating both Birmingham and Bessemer plants at about 50 per cent. Some pipe interests sounded the Birmingham market for pig iron during the week and received a quotation of \$34 in every instance. Sanitary shops look for little business with the opening of spring, but take on stocks, but there

is nothing in the wind right now. Prices had not been revised at the close of the past week.

**Old Material.**—The scrap market remains at its low ebb, without any signs of ability to recover. Old steel scrap rails and heavy melting steel are marked down another \$1 this week. The consumers continue to govern the situation. We quote per gross ton, f.o.b. Birmingham district yards, prices to consumers as follows:

Steel axles .....	\$30.00 to \$31.00
Steel rails .....	18.00 to 18.50
Heavy melting steel .....	16.50 to 17.00
No. 1 railroad wrought .....	20.00 to 21.00
No. 1 cast .....	21.00 to 22.00
Carwheels .....	20.00 to 21.00
Tram carwheels .....	19.50 to 20.00
Machine shop turnings .....	8.50 to 9.00
Cast-iron borings .....	8.50 to 9.00
Stove plate .....	14.00 to 15.00

## British Steel Market

### Coke Strike Menaces Pig Iron Output—Belgium Inquiring for Iron and Machinery (By Cable)

LONDON, ENGLAND, Jan. 15.

A strike at the Cleveland coke ovens threatens to diminish the pig iron output, which is already deficient, and exports to neutrals are impossible. Some steel works are refusing new business owing to the uncertainty of general conditions. America is offering export steel bars at £15 5s. and billets at \$50 f.a.s. Belgium is inquiring for pig iron and machinery, but it is believed that it will be a long time before steel works there are operating, the Cockerill plant requiring at least two years to reconstruct it. Following are the revised official domestic maximum prices for steel applicable after Feb. 1, 1919, per gross ton, net f.o.b. makers' works:

Ship, bridge and tank plates, £14 [£11 10s.].*	
Boiler plates, £15 [£12 10s.].	
Ship, bridge and tank plates, thin, £16 [£14 10s. to £17 10s.].	
Angles and bu'b angles, £13 12s. 6d. [£11 2s. 6d.].	
Small angles, tees and flats, £16 10s. [£14 to £16].	
Beams, £13 12s. 6d. [£11 2s. 6d.].	
Rails, 60 lb. per yd. and upward, £13 7s. 6d. [£10 17s. 6d.].	
Rounds, squares and hexagons, £14 5s. [£12 10s. to £13].	
Small rounds, squares and hexagons, £16 10s. [£15 to £15 10s.].	
Blooms, billets and slabs for rolling, £11 12s. 6d. [£10 7s. 6d.].	
B'ooms, billets and slabs for forging, £12 15s. [£11].	
Ingots for rerolling, £9 5s.	

\*Prices in brackets are the official control prices for domestic business effective till Feb. 1.

## San Francisco

SAN FRANCISCO, Jan. 9.

The local market is influenced to a large extent by the unrest of the labor market in this section. While no trouble is looked for in the shipyards over dissatisfaction with the Macy award, the friction between employers and employees in the machine shops is serious. Offers were made by the Iron Trades Council on Jan. 6 to compromise the retroactive features of the award and a joint meeting was held with the California Metal Trades Association and the California Foundrymen's Association to discuss this offer. The employers' associations feel that they can not afford to pay any retroactive wages and declined to entertain a compromise proposition. Thereupon the Iron Trades Council held a meeting and voted to refer the controversy to the affiliated unions for a strike vote returnable in two weeks. Should a strike be called 10,000 men employed in 290 metal trades plants and foundries would be affected.

Adjustments to an open market seem in a fair way to be brought about with only temporary slacking in demand. Leading interests do not look for much revival before next month, and it is likely that the entire market will not get down to a stable basis before summer. There seems to be a tendency to hold off in buying in large amounts in the belief that lower prices will follow the first downward dip of the market. On the other hand, many believe that the manufacturers

of iron and steel products are in much better position to wait for orders than the consumers are to wait for material. With no reserve stocks the consumer can do nothing unless he buys at once, but most of the mills have made good profits and can afford to use some of these in renewing stocks at their own plants while waiting for consumers to buy. In this section of the country it looks like a contest to see which can hold out the longer and the general belief is that the mills are in the better position. In this event there will be no substantial reductions in most materials in the immediate future, although a gradual shrinkage in prices is expected on all hands. Jobbers' prices have not as yet been changed in this city, although a change may be made at any time. The demand on the jobbers is proving better than was expected and an effort is being made to cut stocks as low as possible before material reductions are made.

**Bars.**—There has been a brisk inquiry for reinforcing bars and the local market is considered steady.

**Structural Steel.**—There is practically no demand for structural steel at present prices. It is felt that it would be bad business policy to build at present cost of all building materials, but a good deal of building is projected.

**Plates and Sheets.**—The market for plates is dull and demand is at a very low ebb. Sheet steel and galvanized sheets are in greater demand than plates, but no large work has yet been undertaken that requires a considerable amount of these materials.

**Wrought Pipe.**—Notwithstanding the fact that a \$6 reduction in the price of welded tubular goods went into effect on Jan. 1, there are no big jobs in immediate sight. Orders for small amounts are fair, almost normal, but the big users of wrought pipe are evidently holding off with the expectation that a lower price will be named in the near future.

**Cast-Iron Pipe.**—What is true of wrought pipe is true of cast iron, except that no reduction has as yet been announced in this territory. There is considerable inquiry and the future is regarded as bright, but no immediate sales in quantity are reported.

**Pig Iron.**—The trade is watching the Eastern pig market very closely to formulate an opinion on the general market trend, but in this market the only pig coming in is on the old contracts and many of these are reported to be about to expire.

**Coke.**—Coke is more plentiful than it has been for a number of months. A number of the foundries are now getting more than their immediate needs call for and are accumulating something of a reserve stock.

**Old Materials.**—Since the removal of the Government sustained price scrap is somewhat easier. There seems to be plenty in sight for immediate needs, and this was likely brought about by some of the holders seeing what was coming and deciding to sell. A good many of the foundries have accumulated more than their immediate wants call for. This condition, however, cannot be maintained, as the removal of the Government embargo on shipping to export is bound to bring Japan into the market and cause a shortage. Quotations are nominally unchanged. The basic price remains \$34, although the deviations for kind and quality are said to be greater than for some time past.

## St. Louis

ST. LOUIS, Jan. 13.

**Pig Iron.**—The waiting policy seems to control the pig iron market at this point, and while some special small sales are going through, they are all for immediate needs and do not amount to much in the aggregate. Consumers continue to have no interest in the market and are not inclined to take any unshipped tonnages, no matter what the terms offered, seeming to feel that until the market stabilizes there is no occasion to worry, particularly as they have enough material on hand to meet any pressing needs that may arise. Shipment of delayed tonnage at the "market" price at the time of shipment has no attractions, as buyers assert that there



is nothing moving sufficient definitely to make a market. A few furnaces are definitely seeking business at \$3 below the recent Government fixed price, and some others are willing to take that price, but are not actively in the market, while still others are standing pat and doing nothing. In consequence, there is literally no activity in the market, although dealers profess to believe that the buyers will begin to come into the market soon after Feb. 1. On what basis they assume this is not yet apparent.

**Coke.**—Although there is some demand for domestic coke, the metallurgical division of the market is practically dead, and no transactions of consequence are reported. The Government price is still nominally quoted.

**Finished Iron and Steel.**—In finished products, mill representatives report some renewed interest in structural material evidenced by the development of plans for spring building, but little definite business is reported. Generally speaking, the situation is just now one of feeling the way with the mill quotations at 2.80c. for structural material, 2.70c. for bars and 3.00c. for plates. Warehouse business is also quiet, with quotations for stock out of warehouse as follows: Soft steel bars, 4.04c.; iron bars, 4.04c.; structural material, 4.14c.; tank plates, 4.34c.; No. 8 sheets, 5.19c.; No. 10 blue annealed sheets, 5.24c.; No. 28 black sheets, cold rolled, one pass, 6.29c.; No. 28 galvanized sheets, black sheet gage, 7.64c.

**Old Material.**—The scrap market shows no stiffening tendency and dealers generally are sitting back and waiting to see what developments the coming weeks are likely to bring forth. Such trading as is going on is to fill immediate needs on contracts and prices are entirely governed by the conditions of the moment—the needs of buyer and seller. The railroads are no longer selling direct to consumers under Government instructions and are therefore bearing the market with the supplies of scrap which they are offering and which dealers are unwilling to take unless at a price low enough to assure a reasonable chance of a good profit for carrying until a sale can be made. Consumers are taking under contracts only what they immediately need and are increasing the severity of inspection.

Per Gross Ton	
Old iron rails.....	\$27.00 to \$27.50
Old steel rails, rerolling.....	21.50 to 22.00
Old steel rails, less than 3 ft.....	18.50 to 19.00
Relaying rails, standard sections, subject to inspection.....	45.00 to 50.00
Old carwheels.....	22.00 to 22.50
No. 1 railroad heavy melting steel...	18.00 to 18.50
Heavy shoveling steel.....	17.00 to 17.50
Ordinary shoveling steel.....	16.00 to 16.50
Frogs, switches and guards, cut apart.....	18.00 to 18.50
Ordinary bundled sheet scrap.....	11.00 to 11.50
Heavy axle and tire turnings.....	12.00 to 12.50

Per Net Ton	
Iron angle bars.....	\$22.00 to \$23.00
Steel angle bars.....	16.00 to 16.50
Iron car axles.....	29.00 to 29.50
Steel car axles.....	25.50 to 26.00
Wrought arch bars and transoms....	24.00 to 24.50
No. 1 railroad wrought.....	18.00 to 18.50
No. 2 railroad wrought.....	17.00 to 17.50
Railroad springs.....	15.00 to 15.50
Steel couplers and knuckles.....	15.00 to 15.50
Locomotive tires, 42 in. and over, smooth inside.....	14.50 to 15.00
No. 1 dealers' forge.....	12.50 to 13.00
Cast iron borings.....	10.00 to 10.50
No. 1 busheling.....	15.50 to 16.00
No. 1 boilers cut to sheets and rings..	10.50 to 11.00
No. 1 cast.....	16.50 to 17.00
Stove plate and light cast.....	14.00 to 14.50
Railroad malleable.....	14.00 to 14.50
Agricultural malleable.....	13.00 to 13.50
Pipes and flues.....	12.50 to 13.00
Heavy railroad sheet and tank.....	11.00 to 11.50
Railroad grate bars.....	11.00 to 11.50
Machine shop turnings.....	10.00 to 10.50
Country mixed.....	11.50 to 12.00
Uncut railroad mixed.....	12.00 to 12.50
Horseshoes.....	16.00 to 16.50

The U. T. Hungerford Brass & Copper Co., 80 Lafayette Street, New York, has acquired a five-story building, about 25 x 100 ft., adjacent to its present 17-story structure.

## New York

NEW YORK, Jan. 14.

**Pig Iron.**—Another step toward the abandoning of the Birmingham basing system so far as Virginia furnaces are concerned has been taken by some of the furnaces which are now quoting at their own furnaces instead of on the Birmingham basis. The new differentials are not, however, exactly like that of the recent Government schedule, as relatively higher prices are asked for the high-silicon irons. The schedule has not been made public in detail. Negotiations for the revision of many contracts are still pending, the usual policy being to extend deliveries rather than to grant lower prices. Foreign business does not develop rapidly, but inquiries are still pending. Although the new rate to Japan from New York ranges from \$30 to \$40, the rate from Liverpool to Japan is about \$12 and American exporters are thus handicapped, but against this is the advantage in prices, as American prices are lower than the export prices in England. We quote prices as follows for tidewater delivery for Northern and Southern grades:

No. 1 foundry, silicon, 2.75 to 3.25.....	\$38.30
No. 2 X, silicon, 2.25 to 2.75.....	36.55
No. 2 plain, silicon, 1.75 to 2.25.....	35.30
No. 2 X, Virginia, silicon, 2.25 to 2.75.....	36.40
No. 1 Southern (all rail).....	39.95
No. 2 Southern (all rail).....	38.70

**Ferroalloys.**—It is officially announced by the War Trade Board that importations of British ferromanganese will now be permitted covering all contracts made prior to April 6, 1917. It is understood that this means the importation of about 25,000 to 27,000 tons which was sold by British representatives in this country prior to that date, most of it at a price ranging from \$164 to \$185 per ton, seaboard. Some of it, however, was sold on the marriage contract basis of a certain amount at higher levels joined with that bought at \$38 some time previously. The demand for either ferromanganese or spiegeleisen is absolutely flat, not even inquiries or sales of carload lots being reported. Domestic producers continue to hold their ferro-manganese at \$225 per ton, delivered. Spiegeleisen, it is believed, can be bought as low as \$60, furnace. Production of ferromanganese in December was considerably below that for November, and it is predicted that the output for January will be decidedly lower. The 50 per cent ferrosilicon market is hard to quote, demand being very light and many consumers who had shell contracts are known to be oversupplied with this alloy. It is admitted, however, that the material can be bought as low as \$130 per ton on contract with spot delivery slightly above this level.

**Finished Iron and Steel.**—The steel market is extremely dull, demand from home and abroad being confined to small, replenishing orders. There are a great many export inquiries in the market, but very little business is being closed. Export companies are greatly worried over the shipping situation, the freight rates from New York to foreign ports being so much higher than from English ports to the same destinations that competition with England is very difficult. If the United States Shipping Board would release a larger number of ships for commercial trade it would become less easy for foreign shipping companies to obtain the high freight rates which now obtain. The rates established by the Shipping Board, though lower than the rates charged from American ports by foreign ships, are higher than the rates fixed by the British Government on shipments from that country. For example, the Shipping Board rate from New York to Rio de Janeiro, Brazil, is \$25 per ton, but British ships are getting \$35 per ton from New York, though the rate from England to Rio de Janeiro is regarded as about \$15. The rate to Japan and China, as fixed by the Shipping Board, is \$45; to Dutch East Indies, \$60; to Australia and New Zealand, \$40, and other rates are in proportion. The structural steel market is inactive, but a few new inquiries are before the fabricators. About 400 tons will be required for a Federal Reserve Bank in Richmond, Va. The Consolidated Gas Co.,

Baltimore, has let a contract to Dietrich Brothers, that city, for a 200-ton fabricating job. The American Bridge Co. has received a formal order for 23,500 tons for the new Naval Ordnance plant at Charleston, W. Va. The Terry & Trench Co., New York, was low bidder on New York subway extensions which will require 16,000 tons of steel, but the contract has not yet been awarded. The American Bridge Co. has received an order for a 400-ton bridge for the Pennsylvania Railroad. No decision has been announced as to the purchase of about 6000 tons of steel for 24 radio towers to be built at Monroe, N. C., by the Navy Department. Car builders are fully engaged in turning out cars for the Railroad Administration, but there is little or no new business in sight either for domestic or foreign roads. One car-building company has about 1000 new freight cars in storage pending settlement of the controversy between railroads and the Railroad Administration as to whether the roads shall accept these cars at the high prices which the Government was obliged to pay for them. A few rail mills are in need of orders, with nothing of importance in prospect. There is a large oversupply of light rails, some of which are being offered for resale. The trade expects that makers of bar iron in the East will reduce prices, but no action has been taken at this writing. Common merchant iron is reported to have been offered for resale at 2.90c., Pittsburgh, but whether any business has been done at this price is not known. Makers are guaranteeing customers against price declines in accepting such small orders as are being offered. Jobbers are generally buying steel bars in preference to bar iron. We quote mill shipments as follows: Steel bars, 2.97c.; shapes, 3.07c.; plates, 3.27c.; common bar iron, 3.77c.; refined bar iron, 5.27c., all New York. Out of store prices are as follows: Steel bars, 3.97c.; structural shapes, 4.07c.; plates, 4.27c.; No. 10 blue annealed sheets, 5.17c.; one-pass cold-rolled black sheets, No. 28 gage, 6.22c.; No. 28 galvanized sheets, 7.57c.; hoops, 4.57c.; bands, 3/16 in., Nos. 10 and 12, 4.57c.; shafting, plus 9 per cent off list.

**Cast-Iron Pipe.**—It is definitely stated that there will be no joint action by the cast-iron pipe people in regard to prices, but it is expected that considerably lower quotations will be made on public lettings as soon as any take place. At present there is neither public nor private business of importance pending. Recent Government prices which still prevail nominally are: \$67.70, New York, for 6-in. and heavier; \$70.70 for 4-in., \$77.70 for 3-in., and \$1 additional for Class A and gas pipe.

**Old Material.**—The market is weak and irregular and on some grades bottom has apparently been reached. On relaying rails high prices are still being named, which are entirely out of line with prices of new rails. No sales at the higher prices are, however, reported. We quote buying prices of dealers and brokers, per gross ton, New York, as follows:

Heavy melting steel.....	\$15.50 to \$16.00
Rerolling rails .....	18.00 to 19.00
Relaying rails .....	50.00 to 55.00
Iron and steel car axles .....	30.00 to 31.00
No. 1 railroad wrought.....	19.00 to 20.00
Wrought-iron track .....	15.00 to 16.00
Forge fire .....	14.00 to 15.00
No. 1 yard wrought, long.....	17.00 to 18.00
Light iron .....	6.00 to 7.00
Cast borings (clean).....	10.00 to 11.00
Machine shop turnings .....	8.00 to 9.00
Mixed borings and turnings.....	8.00 to 9.00
Iron and steel pipe (1 in. minimum diameter), not under 2 ft. long....	16.00 to 17.00
Stove plate .....	17.00 to 18.00
Locomotive grate bars.....	17.00 to 18.00
Malleable cast (railroad).....	16.00 to 17.00
Old carwheels .....	24.00 to 25.00

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, are:

No. 1 machinery cast.....	\$27.00 to \$28.00
No. 1 heavy cast (columns, building materials, etc.), cupola size.....	26.00 to 27.00
No. 1 heavy cast, not cupola size....	19.00 to 20.00
No. 2 cast (radiators, cast boilers, etc.) .....	17.00 to 18.00

The Andrews Engineering Co., Bessemer Building, Pittsburgh, recently chartered, has taken over the business of the Andrews Construction Co. The personnel remains the same.

## Cleveland

CLEVELAND, Jan. 14.

**Iron Ore.**—Ore on Lake Erie docks Jan. 1 amounted to 9,250,368 gross tons, or 1,007,581 tons less than on the same date a year ago when Lake Erie docks held 10,257,949 tons. Shipments to furnaces during December were 1,208,815 tons, being nearly all from stock piles, as receipts during the month amounted to only 123,399 tons. Shipments to furnaces during December, 1917, were 1,050,624 tons. So far nothing has developed to indicate an early ore buying movement. We quote delivered lower Lake ports, as follows:

Old range Bessemer, \$6.65; old range non-Bessemer, \$5.90; Mesaba Bessemer, \$6.40; Mesaba non-Bessemer, \$5.75

**Pig Iron.**—Pig iron producers are showing more of a tendency to revise contracts taken at the Government prices that prevailed last year to the new reduced prices. As announced last week, one Cleveland interest adopted the policy of readjusting contracts to the new price levels and some other producers are now making the readjustments by considering each case on its merits. In some cases, for example, when producers made shipments of iron on low priced contracts at the time high war-time prices were prevailing, taking their loss without complaint, they feel that consumers should take the loss of a declining market and are refusing to revise these contracts. Southern producers so far appear to be refusing to comply with revision requests. This matter will be the important topic that will be taken up for consideration at the meeting of the Central District of the American Pig Iron Association to be held in Pittsburgh Wednesday. The market, which has been practically stagnant for several weeks, is now showing a little life. There is some demand for small lots of foundry iron for prompt shipment and one inquiry for 2000 tons of foundry iron for early shipment. An inquiry came from Connecticut for 2000 tons of basic for shipment within 60 days, but this business is reported to have been placed with an Eastern furnace. Other inquiries for 200 tons of basic and 200 tons of Bessemer iron are reported. The first sales of silvery iron since the price readjustment are reported, a few small lots being taken at the \$3 a ton reduction in price. With the reduction in silvery all grades are now quoted at the new prices. We quote delivered Cleveland, as follows:

Bessemer .....	\$33.60
Basic .....	30.40
Northern No. 2 foundry.....	31.40
Southern No. 2 foundry, silicon, 2.25 to 2.75..	37.25
Gray forge .....	30.40
Ohio silvery, 8 per cent silicon.....	46.90
Standard low phosphorus, Valley furnace.....	51.00

**Coke.**—The coke market is inactive. Shipments are being made in good volume and foundries are well supplied. Practically all consumers are under contract for the first half.

**Alloy Steel.**—The demand for alloy steel is light and prices have declined sharply and are weak. Manufacturers of automobiles and automobile parts are buying very little material, generally only for their immediate requirements, and are getting back to their regular line of production more slowly than had been expected. This is attributed largely to the fact that so much of their capital is tied up in Government contracts that have not yet been adjusted. Central Western forge shops that supply the automobile trade are in need of orders. Alloy steel manufacturers have considerable stocks of ingots and billets which purchasers have instructed them to resell. The Government is expected to make good the difference between the contract price and resale price. Makers will try to dispose of the material at prices that will not demoralize the market. Open-hearth alloy steel bars are generally quoted at 6½c. to 6¾c. for low chrome nickel and about 7c. to 7¼c. for 3¼ per cent nickel and for chrome vanadium steel, but a much lower quotation has been made on low chrome nickel steel and prices on other grades are irregular.

**Tool Steel.**—One of the leading makers of high speed tool steel has reduced its price to \$1.50 base. A great deal of resale tool steel is being offered by muni-



tion makers at this price. Other leading tool steel makers have reduced their prices from \$2 to \$1.90, but so far are declining to shade the latter price.

**Finished Iron and Steel.**—Inquiries for steel are coming out in greater volume but many of these are regarded as price feelers. There still exists the uncertainty among consumers that present prices will not be maintained and this is holding back the placing of orders. Little business is being booked except for early requirements. Pressure to force down prices is being directed particularly toward the plate market. On an inquiry for several thousand tons of ship plates for export, presumably for Japan, a buyer has attempted to force the price down to 2.85c., and it is reported that this price was quoted, but the report lacks confirmation. On the other hand, sales of small lots of plates are being made by an Eastern mill at the old Government price. An Ohio tank shop is inquiring for 1500 tons of plates and the New York Central Railroad wants 400 tons. Automobile manufacturers are also attempting to force down prices but are placing orders for early requirements. Inquiry for steel for export has increased. Among these is one for 3000 tons of light rails and 1500 tons of ties for portable railroad track and another for 500 tons of standard rails, the latter for Spain. The demand for structural material has improved. The Hunkin-Conkey Construction Co., Cleveland, has taken a Government contract for additions to the Quartermaster's depot storage plant at Columbus, Ohio, which includes 145 buildings 100 x 66 ft., of steel construction. The Government has fabricated steel that will be used for this work. The Erie Steel Construction Co., Erie, Pa., has taken 300 tons for the plant of the Wayne Steel Co., Erie. Some inquiry is coming from implement manufacturers for hard steel bars, which mills are quoting at 2.70c., Pittsburgh. The Cleveland bar iron market is still unsettled. Mills have not adopted the 2.90c. Pittsburgh price and there is practically no demand. There is a good volume of inquiry for sheets but little business is being placed because of the price uncertainty. With buyers looking for lower prices for finished steel many inquiries are reaching the mills for small lots that usually go to the jobbers.

Steel bars, 3.87c.; plates, 4.17c.; structural material, 3.97c.; No. 16 blue annealed sheets, 5.07c.; No. 28 black sheets, 6.12c.; No. 28 galvanized sheets, 7.47c.

**Old Material.**—A limited amount of activity has developed in the market, sales of several thousand tons of heavy melting steel, borings and turnings to Cleveland Valley mills being reported. Prices are weak and show a decline on most grades, although turnings have stiffened a little as compared with the low range of prices that were being paid for this grade a week ago. A Cleveland consumer is reported to have purchased 3000 tons at from \$11 to \$11.50. On heavy melting steel, the usual quotation is \$20. Railroad wrought scrap has further declined and a lot offered by the Pennsylvania Railroad brought only \$23. A sale of busheling is reported at \$20. We quote delivered consumers' yards in Cleveland and vicinity as follows:

Steel rails	\$19.00 to \$20.00
Steel rails, under 3 ft.	24.00 to 25.00
Steel rails, rerolling	25.00 to 26.00
Iron rails	27.00 to 28.00
Iron car axles, nominal	37.00 to 38.00
Steel car axles, nominal	37.00 to 38.00
Low phosphorus melting	23.00 to 24.00
Heavy melting steel	20.00
Cast borings, nominal	13.00 to 14.00
Iron and steel turnings and drillings	10.50 to 11.00
Compressed steel	19.00 to 20.00
No. 1 railroad wrought	22.00 to 23.00
Cast iron car wheels	23.00 to 25.00
Agricultural malleable	20.00 to 21.00
Railroad malleable	24.00 to 25.00
Steel axle turnings	18.00 to 19.00
Light bundled sheet	11.00 to 11.50
No. 1 cast, nominal	25.00 to 26.00
No. 1 busheling, nominal	19.00 to 20.00
Railroad grate bars	16.00 to 17.00
Stove plate	16.00 to 17.00

B. M. Jones & Co., New York, dealers in steel products, have leased property at 192-194 Chambers Street, for local headquarters.

## Cincinnati

CINCINNATI, Jan. 14—(By Wire).

**Pig Iron.**—No new features have developed, although there is some talk that the present low price of scrap will eventually have an influence on foundry iron prices. Rumors that furnaces in the South and in the Hanging Rock district will soon blow out for repairs are not without foundation. Many of these furnaces have been in constant operation for a number of years without any let-up for repairs. There is an absence of inquiry from any source. No reductions below \$31 at furnace have been made, and as far as the Southern Ohio furnaces are concerned \$34 represents the lowest figure quoted up until the present time.

Based on freight rates of \$3.60 from Birmingham and \$1.80 from Ironton, we quote, f.o.b. Cincinnati:

Southern coke, No. 1 foundry and 1 soft	\$35.85
Southern coke, No. 2 foundry and 2 soft	34.60
Southern coke, No. 3 foundry	34.10
Southern No. 4 foundry	33.85
Southern gray forge	33.60
Ohio silvery, 8 per cent silicon	49.30
Southern Ohio coke, No. 1	34.05
Southern Ohio coke, No. 2	32.80
Southern Ohio coke, No. 3	32.30
Southern Ohio malleable Bessemer	33.20
Basic, Northern	31.80
Standard Southern carwheel	51.60

**Finished Material.**—Local warehouses are in better condition to take care of their customers' requirements for bars, structural shapes, pipe, etc., and all of them report some improvement in business. However, sales are not in sufficient volume to absorb more than half the material that the mills are now rushing forward. Wire nail jobbers are also now able to accumulate some stocks, but in comparison with normal times their warehouses may be considered practically empty. Rumors have been quietly circulated that there is some difficulty in adopting the new contract for finished material, but it is expected that these difficulties will be ironed out soon.

The following are store prices: Steel bars, 3.93c.; steel bands, 4.53c.; small structural shapes, 4.03c.; plates, 3/16-in. and heavier, 4.23c.; blue annealed sheets, Nos. 8 to 16, 5.13c. base; cold rolled shafting, 9 per cent plus list; twisted bars, 4.05½c., and wire nails, \$4.25 per keg base.

**Old Material.**—There has been no check in the downward tendency of all grades of scrap, and dealers are not willing to buy any stocks unless the material can be picked up at bargain figures. The market changes from day to day, but these changes are invariably downward. Melters of scrap are not contracting ahead and are now only buying to fill their immediate requirements. There is still considerable difficulty on account of cancellation requests. The following are nominal buying prices f.o.b. cars, Cincinnati and southern Ohio, in carload lots.

Per Gross Ton	
Bundled sheet	\$13.00 to \$13.50
Old iron rails	22.00 to 22.50
Relaying rails, 50 lb.	35.00 to 36.00
Rerolling steel rails	20.00 to 21.00
Heavy melting steel	17.00 to 17.50
Steel rails for melting	18.00 to 18.50
Old carwheels	20.00 to 20.50

Per Net Ton	
No. 1 railroad wrought	\$18.00 to \$18.50
Cast borings	7.00 to 7.50
Steel turnings	8.00 to 8.50
Railroad cast	20.00 to 20.50
No. 1 machinery	22.00 to 22.50
Burnt scrap	13.00 to 13.50
Iron axles	30.00 to 31.00
Locomotive tires (smooth inside)	23.00 to 24.00
Pipes and flues	13.50 to 14.00
Malleable cast	15.00 to 16.00
Railroad tank and sheet	10.00 to 10.50

**High-Speed Steel.**—The general reduction made to \$1.90 per lb. on high-speed steel has not brought out any new business of consequence. Orders to selling agencies at the present time are small, and there is no tendency on the part of users to contract ahead. Some grades of steel have been offered below \$1.90, but this figure is considered the market price on standard brands.

**Coke.**—There is more foundry coke seeking a market, due principally to the increased production in different districts. In this immediate vicinity the foundries have requested that some shipments be held up,

as they are not consuming the fuel as fast as it is being received and practically all of them now have stocks piled of sufficient size to take care of their nearby requirements. Blast furnaces are not now troubled with delayed shipments, and while they are not holding back shipments, they are not inclined to press oven operators for more prompt deliveries of coke as they were a month ago. One selling agency calls attention to the radical difference between the situation at this time last year when both the foundries and furnaces were operating on a hand-to-mouth basis.

### Steel Ingot Output for 1918

The estimated steel ingot production of the United States in 1918 was 42,212,000 gross tons according to statistics compiled by the American Iron and Steel Institute from reports submitted by 29 companies which made about 85.10 per cent of the steel ingots produced in 1917. The December output was 2,992,306 tons or at the rate of 42,194,000 tons per year, calculated on the same basis. The table below gives the ingot production of these 29 companies for the past 17 months:

	Monthly Production of Steel Ingots—Gross Tons			
	Open-Hearth	Bessemer	All Other	Total
August, 1917.....	2,251,013	863,873	8,331	3,123,217
September.....	2,195,556	770,064	6,639	2,972,259
October.....	2,475,754	870,494	5,687	3,351,935
November.....	2,384,218	772,489	9,550	3,166,257
December.....	2,195,832	524,084	13,806	2,733,722
January, 1918.....	1,763,356	429,588	10,901	2,203,845
February.....	1,805,233	454,457	14,051	2,273,741
March.....	2,331,048	763,255	16,078	3,110,381
April.....	2,377,974	769,249	16,187	3,163,410
May.....	2,475,131	796,244	15,858	3,287,233
June.....	2,281,718	786,380	15,348	3,083,446
July.....	2,311,545	784,997	17,093	3,113,635
August.....	2,229,177	766,860	17,643	3,033,680
September.....	2,407,993	772,863	16,802	3,197,658
October.....	2,527,776	807,043	17,377	3,352,196
November.....	*2,291,720	*753,409	15,631	*3,060,760
December.....	2,273,189	706,844	12,273	2,992,291

\*Revised.

### Farm Wagon and Truck Standards Maintained

Over 45 manufacturers of farm wagons and trucks have agreed to adhere to the 56-in. track and 38-in. width of bed as a standard after Jan. 1; also to confine manufacture to other standards, including height of wheels, oval edge tires, tire widths, etc., all of which were approved by the Conservation Division of the War Industries Board. Wagons of old patterns made prior to Dec. 31 will be sold, but no more will be made. Advantages gained by adherence to the new standards will consist of less capital in materials and manufactured stock, greater uniformity in factory operation and the possibility of securing repairs and extra parts without costly delays.

### New Prices for Radiators

The American Radiator Co. has issued new discount sheets showing reductions of approximately 25 per cent in prices of radiators and boilers manufactured by the company. The company also has issued a special announcement stating that until further notice it will protect all orders against any decline in its prices. In making the announcement it expresses the hope that the reduction in prices will increase new building.

The Eddystone rifle plant of the Midvale Steel & Ordnance Co., Philadelphia, was shut down Saturday, Jan. 10, and 3000 men were thrown out of employment. When the armistice was signed the plant employed 15,000 men, but all except 3000 had left for other employment by the time the plant was closed. Termination of Government contracts was the reason for the shut-down. It is probable that the equipment in the plant will be sold.

The Carnahan Tin Plate & Sheet Co., Canton, Ohio, announces the removal of its Eastern sales office in the Bourse Building, Philadelphia, to the Woolworth Building, New York.

## IRON AND INDUSTRIAL STOCKS

### Featureless Market Confined to Professional Transactions by Money Stringency

NEW YORK, Jan. 13.

For the most part the market has been without trend, although there are occasional spurts of buying by isolated groups temporarily stimulated by buying of professional traders. The common stocks of steel-making companies all showed a slight decline, preferred conversely a slight advance. United States Steel common closed last week at 90%, a 4½-point drop; preferred, on the other hand, closed at 114%, a 1-point advance.

The range of prices on active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

Allis-Chalm. com. 32¼-35¼	Int. Har. com. 113-117
Allis-Chalm. pf. 83-85¼	Int. Har. pf. 116¾
Am. Can. com. 47¼-50¼	Lackaw. Steel 64½-66½
Am. Can. pf. 100-101	Lake Supr. Corp. 17¼-18¼
Am. Car & F. c. 88¼-91¼	Midvale Steel 43%-44%
Am. Car & F. pf. 114-114½	Nat.-Acme 30%-31¼
Am. Loco. com. 60-61½	Nat. En. & S. c. 47½-48¾
Am. Loco. pf. 101-102½	Nat. En. & S. pf. 93%-93½
Am. Radiator com. 298	N. Y. Air Brake 104-105
Am. Ship com. 87-89	Nova Scotia Steel 54%-55
Am. Steel Fdries. 85-86	Pressed Steel c. 63½-64½
Bald. Loco. com. 71¼-75½	Pressed Steel pf. 104
Beth. Steel com. 57½-61½	Ry. Steel Spg. c. 73-75
Beth. Steel Cl. B. 57%-62	Ry. Steel Spg. pf. 106
Case (J. I.) pf. 92¼-93¼	Republic com. 73%-75
Central Fdry. com. 30¼	Republic pf. 100-102
Chic. Pneu. Tool. 65-66	Sloss com. 49-50
Colo. Fuel 35-38	Superior Steel 35¼-36¼
Cruc. Steel com. 56-59	Transue-Williams 37¼-37¾
Cruc. Steel pf. 91%-92	Un. Alloy Steel. 37%-39
Deere & Co. pf. 95¼-96	U. S. Pipe com. 14¼-14¾
Gen. Electric 149¼-150	U. S. Steel com. 90%-94%
Gt. No. Ore Cert. 32¼-36¼	U. S. Steel pf. 114¼-115½
Gulf States Steel. 59-61½	Westingh. Elec. 41¼-42¼

### Dividends

The Crocker-Wheeler Co., quarterly, 2 per cent on the common and 1½ per cent on the preferred, payable Jan. 15.

The Dominion Steel Corporation, Ltd., quarterly, 1½ per cent, payable Feb. 1.

The Midvale Steel & Ordnance Co., quarterly, \$1.50, payable Feb. 1.

The Poole Engineering & Machine Co., quarterly, 1½ per cent, payable Jan. 14.

### Canada Iron Foundries Report

Canada Iron Foundries, Ltd., Montreal, reports a fair gain in profits for the year ending Sept. 30 last, gross from operation amounting to \$580,824 before deductions for depreciation, etc., against \$528,097 in 1917. With interest on investments added in there was a total of \$617,357 against \$542,257. As in 1917, the bulk of the year's earnings went to strengthening the financial position and improving the physical assets of the company. Disbursements to holders of the company's securities were made up to \$36,533 in interest in A debentures, this including provision for sinking fund, and \$71,613 in a payment of 2½ per cent interest on B debentures. The balance of profits was applied largely to writing down, renewals, etc. After all deductions a balance of \$6,866 was carried forward in profit and loss, against \$5,995 a year ago. The properties of the company are being improved out of earnings and the financial position held strong.

### Condition of Russian Steel Plants

In the issue of the French magazine, *L'Usine*, for Nov. 7, 1918, there is a brief article regarding the condition of the Russian plants in the Donetz region last August. The information was received by wireless, and is interesting in connection with Alexandre Gouvy's article on the Russian steel plants, in *THE IRON AGE*, Nov. 19, 1918. At Briansk there were in August 2500 workmen, compared with a normal of 6000. At Drouj-kovka 3000 men were still working. The conclusion states that in general the equipment of this region has not suffered greatly and can be put in operation very quickly after the necessary repairs caused by the poor upkeep of engines and machines, due to the lack of grease and oil during the war and of unskilled men.



## Metal Markets

### The Week's Prices

Cents Per Pound for Early Delivery							
Copper, New York			Lead		Spelter		
Jan.	Lake	Electro-lytic	Tin, New York	New York	St. Louis	New York	St. Louis
8.....	21.00	21.00	71.50	5.75	5.50	7.85	7.50
9.....	21.00	21.00	71.50	5.75	5.50	7.80	7.45
10.....	20.50	20.50	71.50	5.75	5.50	7.75	7.40
11.....	20.50	20.50	71.50	5.75	5.50	7.65	7.30
13.....	20.50	20.50	71.50	5.75	5.50	7.60	7.25
14.....	20.50	20.50	71.50	5.75	5.50	7.60	7.25

NEW YORK, Jan. 14.

The markets continue very inactive. Copper has been sold in small volume at 20c. to 21c. The tin market is stagnant. The lead market has turned very quiet again. Spelter continues to ease on light demand. Antimony is steady.

#### New York

**Copper.**—The copper market is generally conceded to have reached a level of 20c. to 21c. per lb. for early and first quarter delivery for both electrolytic and Lake. Sales of electrolytic have been made at these levels, but the quantity has not been large. We therefore quote the market at 20.50c., New York, for early delivery. One or two producers have sold some metal at 23c., but with the understanding that the price shall be that ruling at the time of delivery. Output at mines and smelters has been decidedly reduced. Foreign demand is negligible and the reported sales to Italy are denied. Representatives of the Copper Export Association will soon sail for Europe to study the situation and the prospects for demand for the metal from England, France and Italy in particular. It is known that these countries have considerable stocks, estimated sufficient for two or three months. The quotation for export continues at 23c., New York.

**Tin.**—The market continues very dull. The second-hand lots, referred to last week, are still being offered with no takers, which fact emphasizes the dullness and rather indicates that the United States Products Co. is not receiving many orders for the metal it has to sell at the fixed price of 72.50c., New York or Chicago, otherwise these cheaper lots would be taken first. We quote the market for Straits tin as nominal at 71.50c., New York. The general market is stagnant. American smelted tin, 99 per cent pure, is understood to be obtainable at about 67.50c., New York. The Tin Importers' Association is daily receiving from consumers replies to its circulars, approving of the stand it has taken. It is proposed that Congressmen be urged to see that some action is taken to make the market an open one again, the present situation being pointed out as a menace to the entire tin trade and manufacturers using tin. Spot Straits in London was quoted to-day at £255 10s. per ton.

**Lead.**—Dullness again pervades the lead market, the spurt in demand noted last week having tapered off. The leading interest still maintains its quotation at 6c., New York, or 5.70c., St. Louis, and the outside market is unchanged at 5.75c., New York, but there is no business. Some believe that the price will go lower if demand does not appear soon. The outside St. Louis quotation is now 5.50c.

**Spelter.**—Demand is no better and the market continues dull on offerings by some producers competing for the little business that appears. Other producers refuse to quote or to be interested. Prime Western for January or early delivery is quoted at 7.25c., St. Louis, or 7.60c., New York, with February and March 5 to 10 points under this level. The weekly report of the Government, showing output and stocks for the week ended Jan. 4, reveals an increase in stocks of all grades of over 1700 tons, which is not an encouraging market factor.

**Antimony.**—The metal can be bought, duty paid, New York, at 7.75c. to 8c. per lb. for early delivery in

wholesale lots, but there is very little business reported.

**Aluminum.**—It is understood that the maximum prices for No. 1 virgin aluminum and for scrap will continue in force until March 1, the original date set. These prices are 33c. per lb. for 50-ton lots, 33.10c. per lb. for 15 to 50-ton lots and 33.20c. per lb. for 1 to 15-ton lots.

**Old Metals.**—The expected resumption of business has not yet taken place and as a result the market is very depressed. Dealers' selling prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	20.50
Copper, heavy and wire.....	19.00
Copper, light and bottoms.....	16.50
Brass, heavy.....	13.50
Brass, light.....	10.50
Heavy machine composition.....	20.00
No. 1 yellow rod brass turnings.....	11.00
No. 1 red brass or composition turnings.....	16.50
Lead, heavy.....	5.25
Lead, tea.....	4.00
Zinc.....	5.50

#### Chicago

JAN. 14.—The metals have shown improvement in the last week and considerable quantities in all except tin have changed hands. The copper dealings have been handled mostly by second hands. The more attractive lead price induced some good buying. Some carload lots of antimony were purchased at low prices. The tin market is stationary, and spelter is quiet. We quote copper at 23c. for carloads; tin, 75c. to 77c.; lead, 5.62½c.; spelter, 7.50c.; antimony, 8.50c. to 9c. On old metals we quote copper wire, crucible shapes, 15.50c.; copper clips, 15c.; copper bottoms, 14c.; red brass, 15c.; yellow brass, 10c.; lead pipe, 4.25c.; zinc, 4.50c.; pewter, No. 1, 30c.; tin foil, 35c., and block tin, 45c.

#### St. Louis

JAN. 14.—Non-ferrous metals continue quiet, with car lot quotations as follows: Lead, 5.65c.; spelter, 7.60c. Less than car lots: Lead, 6.25c. to 6.50c., according to quantity; spelter, 8.25c. to 8.50c.; tin, 72½c.; copper, nominal; antimony, Asiatic, 10c. In the Joplin district, ores continue rather weak, with blende not getting above \$55 for top grades and selling as low as \$40 for second grades, basis of 60 per cent metal. Calamine ranges from \$30 to \$40 per ton, basis of 40 per cent metal. Lead is dull at \$65, and even lower. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, 8c.; heavy red brass, 16c.; heavy yellow brass, 11c.; light copper, 14.50c.; heavy copper and copper wire, 16c.; zinc, 4c.; lead, 5c.; pewter, 40c.; tin foil, 45c.; tea lead, 4c.; aluminum, 20c.

#### Metric Association Meeting

At the second annual meeting of the American Metric Association, held in Baltimore on Dec. 27, 1918, and in Washington on Dec. 28, a resolution was adopted requesting the formation of local sections throughout the country. United States Senator John F. Shafroth read a bill which he has introduced in Congress, and the bill was indorsed by the association. Secretary of Commerce William C. Redfield at the association voiced his conviction that the metric weights and measures should and would be adopted for general use in the United States.

The following officers were elected for the year 1919: President, George F. Kunz, New York; first vice-president, Wm. Jay Schiefflin, New York; second vice-president, Jesse M. Smith, New York; third vice-president, David A. Molitor, Detroit; treasurer, Arthur P. Williams, New York; secretary, Howard Richards, Jr., 156 Fifth Avenue, New York.

The following was among the resolutions passed: "Resolved, That the American Metric Association send greetings to the universities, colleges and other educational institutions, and respectfully invite their co-operation in bringing in the general use of meters, liters and grams for the welfare of America."

The tenth annual convention of the American Iron, Steel and Heavy Hardware Association will be held at St. Louis, May 20-22. The Planters' Hotel will probably be selected as headquarters.

# Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight rates from Pittsburgh on finished iron and steel products, including wrought iron and steel pipe, with revisions effective Nov. 1, 1918, in carloads, to points named, per 100 lb., are as follows: New York, 27c.; Philadelphia, 24.5c.; Boston, 30c.; Buffalo, 17c.; Cleveland, 17c.; Cincinnati, 23c.; Indianapolis, 25c.; Chicago, 27c.; St. Louis, 34c.; Kansas City, 59c.; St. Paul, 49½c.; Denver, 99c.; Omaha, 59c.; minimum carload, 36,000 lb. to four last named points; New Orleans, 38.5c.; Birmingham, 57.5c.; Pacific Coast, \$1.25; minimum carload, 80,000 lb. To the Pacific Coast the rate on steel bars and structural steel is \$1.315, minimum carload 40,000 lb.; and \$1.25, minimum carload 50,000 lb. On wrought iron and steel pipe the rate from Pittsburgh to Kansas City is 50c. per 100 lb., minimum carload 46,000 lb.; to Omaha, 50c., minimum carload 46,000 lb.; to St. Paul and Minneapolis, 49.5c., minimum carload 46,000 lb.; Denver, 99c., minimum carload 46,000 lb. A 3 per cent transportation tax applies. On iron and steel items not noted above, rates vary somewhat and are given in detail in the regular railroad tariffs.

## Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in. angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees, structural sizes, 2.80c.

## Wire Products

Wire nails, \$3.50 base per keg; galvanized, 1 in. and longer, including large-head barb roofing nails taking an advance over this price of \$2, and shorter than 1 in., \$2.50. Bright basic wire, \$3.35 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3.25; galvanized wire, \$3.95; galvanized barb wire and fence staples, \$4.35; painted barbed wire, \$3.65; polished fence staples, \$3.65; cement-coated nails, \$3.40 base; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 47 per cent off list for carload lots, 46 per cent for 1000-rod lots, and 45 per cent off for small lots, f.o.b. Pittsburgh.

## Bolts, Nuts and Rivets

Large structural and ship rivets.....\$4.40 base  
Large boiler rivets.....\$4.50  
7/16 in. x 6 in. smaller and shorter rivets.....

50-10 per cent off list

Machine bolts h.p. nuts, ¾ in. x 4 in.:  
Smaller and shorter, rolled threads.....50-10-5 per cent off list  
Cut threads.....50-5 per cent off list

Larger and longer sizes.....40-10 per cent off list

Machine bolts, c.p.c. and t. nuts, ¾ in. x 4 in.:

Smaller and shorter.....40-10 per cent off list

Larger and longer.....35-5 per cent off list

Carriage bolts, ¾ x 6 in.:

Smaller and shorter, rolled threads.....50-5 per cent off list

Cut threads.....40-10-5 per cent off list

Larger and longer sizes.....40 per cent off list

Lag bolts.....50-10 per cent off list

Plow bolts, Nos. 1, 2, 3.....50 per cent off list

Hot pressed nuts, sq. blank.....2.50c. per lb. off list

Hot pressed nuts, hex. blank.....2.30c. per lb. off list

Hot pressed nuts, sq. tapped.....2.30c. per lb. off list

Hot pressed nuts, hex. tapped.....2.10c. per lb. off list

C.p.c. and t. sq. and hex. nuts, blank.....2.25c. per lb. off list

C.p.c. and t. sq. and hex. nuts, tapped.....2.00c. per lb. off list

Semi-finished hex. nuts:

¾ in. and larger.....60-10-10 per cent off list

9/16 in. and smaller.....70-5 per cent off list

Stove bolts.....70-10 per cent off list

Stove bolts.....2½ per cent extra for bulk

Tire bolts.....50-10-5 per cent off list

The above discounts are from present lists now in effect.

All prices carry standard extras.

## Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$57; chain rods, \$65; screw, rivet and bolt rods and other rods of that character, \$65. Prices on high carbon rods are irregular. They range from \$70 to \$80, depending on carbons.

## Railroad Spikes and Track Bolts

Railroad spikes 9/16 in. x 4½ in. and heavier, per 100 lb., \$3.70, in lots of 200 kegs of 200 lb. each, or more; track bolts, \$4.90. Boat spikes, \$5.05 per 100 lb., f.o.b. Pittsburgh.

## Terne Plate

Prices of terne plate are as follows: 8-lb. coating, 200 lb., \$14.50 per package; 8-lb. coating, I. C., \$14.80; 12-lb. coating, I. C., \$16.50; 15-lb. coating, I. C., \$17.50; 20-lb. coating, I. C., \$18.75; 25-lb. coating, I. C., \$20.00; 30-lb. coating, I. C., \$21.00; 35-lb. coating, I. C., \$22.00; 40-lb. coating, I. C., \$23.00 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

## Iron and Steel Bars

Steel bars at 2.70c. from mill. Relined iron bars, \$5.00c.; common iron bars, 3.50c. in carload and larger lots, f.o.b. mill.

## Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card.

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1/8, ¼ and ⅜	47	20½	1/8 and ¼	26	+1
½	51	36½	⅜	27	List
¾ to 3	54	40½	½	31	13
			¾ to 1½	36	20
Lap Weld			Butt Weld		
2	47	34½	1½	21	6
2½ to 6	50	37½	1½	28	14
7 to 12	47	33½	2	29	15
13 and 14	37½	..	2½ to 6	31	18
15	35	..	7 to 12	28	15
Butt Weld, extra strong, plain ends			Lap Weld, extra strong, plain ends		
1/8, ¼ and ⅜	43	25½	1½	22	7
½	48	35½	1½	28	14
¾ to 1½	52	39½	2	30	17
2 to 3	53	40½	2½ to 6	32	20
			4½ to 6	31	19
			7 to 8	23	11
			9 to 12	18	6

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe have been nine (9) points lower (higher price).

## Boiler Tubes

The following are the prices for carload lots, f.o.b. Pittsburgh:

Lap Welded Steel	Charcoal Iron
3½ to 4½ in.....37	3½ to 4½ in.....12½
2½ to 3½ in.....27	3 to 3½ in.....+ 2
2½ in.....20½	2½ to 2¾ in.....+ 4½
1¾ to 2 in.....16	2 to 2½ in.....+ 19½
	1¾ to 1¾ in.....+ 32

## Standard Commercial Seamless—Cold Drawn or Hot Rolled

Per Net Ton	Per Net Ton
1 in.....\$334	1¾ in.....\$214
1½ in.....274	2 to 2½ in.....184
1¾ in.....264	2½ to 3¾ in.....174
1½ in.....214	4 in.....194
	4½ to 5 in.....214

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotiation.

## Sheets

Makers' price for mill shipments on sheets of United States standard gage in carload and larger lots are as follows:

Blue Annealed—Bessemer	Cents per lb.
No. 8 and heavier.....	3.85
Nos. 9 and 10 (base).....	3.90
Nos. 11 and 12.....	3.95
Nos. 13 and 14.....	4.00
Nos. 15 and 16.....	4.10
Box Annealed, One Pass Cold Rolled—Bessemer	
Nos. 17 to 21.....	4.50
Nos. 22 and 24.....	4.55
Nos. 25 and 26.....	4.60
No. 27.....	4.65
No. 28 (base).....	4.70
No. 29.....	4.80
No. 30.....	4.90

## Galvanized Black Sheet Gage—Bessemer

Nos. 10 and 11.....	5.05
Nos. 12 and 14.....	5.15
Nos. 15 and 16.....	5.30
Nos. 17 to 21.....	5.45
Nos. 22 and 24.....	5.60
Nos. 25 and 26.....	5.75
No. 27.....	5.90
No. 28 (base).....	6.05
No. 29.....	6.30
No. 30.....	6.55

## Tin-Mill Black Plate—Bessemer

Nos. 15 and 16.....	4.50
Nos. 17 to 21.....	4.55
Nos. 22 to 24.....	4.60
Nos. 25 and 27.....	4.65
No. 28 (base).....	4.70
No. 29.....	4.75
No. 30.....	4.75
Nos. 30½ and 31.....	4.80



## PERSONAL

J. M. Jones, manager of the sheet and tin plate plant of the Bethlehem Steel Co., Sparrows Point, Md., has resigned to take effect Feb. 1. In an announcement made by W. F. Roberts, general manager, it is stated that Mr. Jones expects to take up other important duties in the vicinity as soon as final arrangements are perfected. "The management of the sheet and tin-plate plant," says Mr. Roberts, "will be consolidated with that of the steel plant of the Bethlehem Steel Co. at Sparrows Point. Various officers of the Bethlehem Steel Co. who have associated with Mr. Jones find cause for regret that he is leaving the company." Mr. Jones became associated with the company more than two years ago as manager of the sheet and tin plate plant when the company purchased the Baltimore Sheet & Tin Plate Co., of which he was president. Previous to going to Baltimore, Mr. Jones was vice-president and general manager of the Massillon Rolling Mill Co., Massillon, Ohio. After becoming associated with the Bethlehem Steel Co., he had complete charge of the construction of the company's modern 12-mill tin plate plant and since then has been in charge of its operation.

Cleveland manufacturers have completed the organization of a local executive committee of the Association of Manufacturers of War Material, which was organized recently to use its influence to secure the speedy payment of claims due Government contractors on informal contracts. Myron T. Herrick, president Cleveland Chamber of Commerce, is chairman of the committee and members in the iron and steel lines include H. E. Allyn, president Aluminum Castings Co.; H. B. Bole, vice-president Hydraulic Pressed Steel Co.; R. S. Hall, vice-president Bourne-Fuller Co.; H. W. Haggerty, vice-president McKinney Steel Co.; A. W. Henn, president National Acme Co.; G. H. Kelly, vice-president White Co., and H. C. Osborn, president American Multigraph Co.

George E. Randles, general manager the Foote-Burt Co., Cleveland, has resigned as director of the maintenance division Motor Transport Corps and has returned to his regular duties in Cleveland from Washington, where he has been located for more than a year. As part of his work for the Government he designed a base repair shop for repairing and building Army motor trucks, and for organizing and training automobile mechanics for the operation of this shop. Before leaving Washington, his co-workers in the Motor Transport Corps presented Mr. Randles a fine watch.

William H. Davey, president and general manager of the Mansfield Sheet & Tin Plate Co., Mansfield, Ohio, has been elected president of the Mansfield Chamber of Commerce for the present year.

William L. Russell, prominently identified with the oil industry in Lima, Ohio, has been elected president of the East Iron & Machine Co., Lima. C. C. Mosher, who has been president, will continue to have management of the plant and will have the official title of vice-president and general manager. This company, in addition to its other products, has commenced the manufacture of differentials for automobiles and trucks.

James A. Tweedy of the machinery department of Joseph T. Ryerson & Son, Inc., 30 Church Street, New York, has reopened a branch office for the company at Philadelphia in the Widener Building.

M. G. Spencer, formerly connected with the Midvale Steel Co., and later with the Watertown Arsenal as chief chemist, has joined the staff of the Electric Steel Co. of Indiana, Indianapolis, in charge of metallurgical operation.

J. B. Corby has resigned as St. Louis district manager of sales for the Chicago Pneumatic Tool Co. and has assumed the active management of the Corby Supply Co., St. Louis.

Frank J. Herman, formerly with W. J. Rainey and more recently manager of the Coke Section of the United States Fuel Administration, has resigned to accept a position as assistant to the president of the Rainey-Wood Coke Co., which is building a by-product coke plant at Swedeland, Pa.

E. C. McHugh, formerly in charge of an operating department of the Dayton-Wright Airplane Co., Dayton, Ohio, has accepted the position of works manager of the Stuebing Truck Co., Cincinnati.

C. E. Thompson, president Steel Products Co., Cleveland, has resigned as president of the Glenn L. Martin Co., airplane manufacturer, Cleveland, and has been succeeded by Mr. Martin, who was formerly president of the company that bears his name.

George W. Felton, formerly assistant chief engineer with the New Process Gear Corporation, Syracuse, N. Y., has taken the position of factory superintendent with the Crofoot Gear Works, Inc., Cambridge, Mass.

E. S. Harmon has resigned his position as assistant to R. W. Gardner, Pittsburgh district representative of the Fuel Administration, and has been made sales agent of the Carnegie Coal Co., Pittsburgh.

J. G. Butler, Jr., Youngstown, Ohio, has been re-elected president of the Society for the Prevention of Cruelty to Animals, of that city.

Wiley L. Byers, for several years general sales manager of the Producers' Coke Co., Uniontown, Pa., has resigned and has opened an office in Uniontown as a dealer in foundry and furnace coke. T. J. Davis, for several years assistant to Mr. Byers, succeeds him.

M. C. Turpin, who left the Westinghouse Department of Publicity, East Pittsburgh, to enter the Ordnance Department at Washington, as a civilian, and enlisted later in the service, going to the officers' training camp at Camp Humphreys, Va., and later to Camp Kendrick, N. J., in the Chemical Warfare Service, has been honorably discharged and has returned to his former duties with the Westinghouse company.

Ira M. Levy, representing the Hudson Trading Co., exporter of steel, machinery, etc., located at 18 East Forty-first Street, New York, leaves for an extended trip to the West Indies on behalf of this company the end of the week.

George D. Babcock, formerly factory manager of the H. H. Franklin Mfg. Co., Syracuse, N. Y., has resigned his commission as lieutenant colonel, Ordnance Department, to accept an appointment as operating manager of the Holt Mfg. Co., Peoria, Ill., and Stockton, Cal. His work for the United States took him twice to France in the war period.

Major George L. Norris, engaged in aircraft production, has received his honorable discharge from the Army and has returned to his former position as metallurgical engineer with the American Vanadium Co., Pittsburgh. Major Norris was district manager of production, Pittsburgh office, until Nov. 1, when he was transferred to Washington and assigned to duty as chief metallurgist, Raw Materials Department, Bureau of Aircraft Production.

Walter M. Jackson, Boston, formerly contracting engineer for the Berger Mfg. Co. of Massachusetts, just released from active duty with the U. S. Navy, has joined the sales force of Josef F. A. Comstedt, iron, steel and metals, 120 Broadway, New York.

At the recent annual meeting of the Rogers-Brown Iron Co. (Susquehanna Furnaces) of Buffalo, William S. Rogers was elected secretary and Harold T. Clement, treasurer of the company.

W. D. Bunker, formerly vice-president and general manager of the Judson Mfg. Co., San Francisco, who resigned that position several months ago and joined the engineering-corps of the army, where he obtained the rank of captain, has just been honorably discharged from the army and has again entered business in San Francisco. Mr. Bunker has opened an office in the Call Building, San Francisco, as manufacturers' representative, and mechanical and electrical engineer.

Frank S. Chavannes, president Chesapeake Iron Works, Baltimore, has been re-elected vice-president of the Merchants and Manufacturers' Association.

H. B. Ressler, manager St. Louis branch of Joseph T. Ryerson & Sons; G. B. Collins, American Car & Foundry Co.; and George F. Stedman, Curtis & Co. Mfg. Co., have been appointed members of the Rehabilitation Committee of the Missouri Officers' Association.

The La Salle Steel Co., Chicago, announces the appointment of Joseph J. Conlisk as sales representative in charge of Minnesota and Wisconsin.

Carrington Cabell, assistant purchasing agent for the Commonwealth Steel Co., St. Louis, and Harper Patton, of the auditing department of the same company, have resigned in order to engage in the oil business at St. Louis.

Angelo R. Clas, secretary and treasurer Falls Motors Corporation, Sheboygan, Wis., has resigned to become president and general manager of the Lewis Steel Co., Toledo, O.

B. V. H. Johnson, vice-president and sales agent of the Commonwealth Steel Co. of St. Louis, has received word that his son, Lieut. Donald S., after "going over the top" 13 times, received the Croix de Guerre.

Patrick McManus, Milwaukee, who retired Jan. 6 as sheriff of Milwaukee county, has become connected actively with the Northern Foundry Co., Marinette, Wis., of which he is vice-president.

A. A. Straub, general manager of the Connellsville office of the Superba Coal & Coke Co., has been transferred to its Pittsburgh office, and expects to move his family there soon.

The Black & Decker Mfg. Co., Baltimore, maker of electric portable drills and tire pumps, announces that it has secured the services of D. G. Caywood, formerly sales manager of the Brunner Mfg. Co., Utica, N. Y., in the capacity of special representative, to carry on the field work in the distribution of the Black & Decker specialized products. He has been engaged in the air compressor field for about 15 years. The company also announced that Graham W. Brogan, advertising manager of the Duesenberg Motors Corporation, has become associated with it to handle publicity.

H. C. Bellville, of the city office of the Commonwealth Steel Co., St. Louis and Granite City, Ill., has been elected vice-president and director of publicity of the company with which he has been associated for 12 years.

Capt. deCourcy Browne, ordnance department, U. S. A., expects to return to the United States from France in the near future and will be located at the Engineers' Club, 32 W. Fortieth Street, New York. Mr. Browne, before entering the service, was metallurgical engineer of the Metal & Thermit Corporation, 120 Broadway, New York.

James Arnold, well known in Imperial Munitions Board circles and more recently with the Turnbull Elevator Mfg. Co., Toronto, has been appointed works manager of the Canadian Foundries and Forgings, Ltd., plant (James Smart Mfg. Co.) at Brockville, Ont.

Andrew E. Kubly, who represented the Illinois Steel Co. in Wisconsin for several years, is now connected with the Steel Sales Corporation, Chicago.

Charles H. Norton, chief engineer The Norton Grinding Co., Worcester, Mass., addressed the local superintendents' club, Jan. 2, on "Clocks, Watches and Bells."

S. G. Gilfillan, president Belfont Iron Works, Ironton, Ohio, has received information that his son Captain Dean M. Gilfillan, has received the distinguished service cross in recognition of bravery in action while serving the American Army in France. Captain Gilfillan is in a hospital, having been severely injured in one leg and suffering from shell shock, but is recovering.

Miss Margaret A. Gerrity, 548 Orange Street, New Haven, Conn., formerly with the Marlin-Rockwell Corporation, New Haven, is now representing, in Connecticut, Rhode Island and vicinity, Flint & Chester, Inc., New York, dealer in machinists' supplies.

J. H. Regan, assistant secretary Pressed Steel Car Co., has been transferred from the New York office to the Chicago office of the company.

Kenneth C. Gardner of the New York office of the Pressed Steel Car Co. has been appointed assistant general sales manager, and has moved to Pittsburgh.

Harry Wright, president Consolidated Rolling Mills & Foundries Co., 25 Broad Street, New York, is home after a seven months' business trip in South America.

Frank Purnell, identified with the Youngstown Sheet & Tube Co., Youngstown, Ohio, for 15 years, has accepted a position with the newly formed Consolidated Steel Corporation, New York, and will become assistant to the vice-president. Mr. Purnell has already entered upon his new duties. For about 15 months he was in Washington as assistant to J. Leonard Replogle, Director of Steel Supply.

Robert E. Newcomb, superintendent of the Deane works of the Worthington Pump & Machinery Corporation, located at Holyoke, Mass., has been elected president of the New England Foundrymen's Association. He has been with the Deane works since 1907, and has been superintendent for 10 years. After graduation from the Holyoke High School he studied mechanical engineering at Cornell University, where he received his degree. He is a member of the American Society of Mechanical Engineers, the National Foundrymen's Association and the American Society for Testing Materials.

James Lewis Litton of Litton's Machine Tool Co., London, England, was the guest of honor at a dinner given by a number of his friends at Churchill's Restaurant, New York, on Tuesday evening, Jan. 7. It was a farewell dinner, Mr. Litton having sailed the following day for England. A gold fob was presented. Mr. Litton is also vice-president of the Terminal Machine Co., New York. He will return to New York in the near future.

Ensign Irving Burrows, formerly San Francisco representative of the Blaw-Knox Co., Pittsburgh, manufacturer of steel products, who entered Government service more than a year ago, has been honorably discharged and very shortly will re-open the San Francisco office of this company at 1528 Second Street, that city.

Warren W. Baker, president, and Francis S. Carr, vice-president, Pennsylvania Steel Export Co., Widener Building, Philadelphia, expect to sail soon for England on export business.

Harry D. Carson, for many years an officer of the Rogers-Brown Iron Co., Buffalo, has severed his connection with that company to take a position in the Philadelphia office of Rogers, Brown & Co.

## OBITUARY

CLIFFORD H. JENKINS, Chicago manager of the Domhoff & Joyce Co., Cincinnati, dealer in pig iron and coke, died Jan. 9, in the Post-Graduate Hospital, Chicago, of pneumonia, after an illness of a few days. Mr. Jenkins was born in Cincinnati, April 10, 1881. He was a Mason and member of the South Shore Country, Midlothian and Illinois Athletic Clubs. He left a wife.

GEORGE D. DEVITT, one of the oldest blast furnace superintendents in the Shenango Valley, Pa., died at his home in Sharon Pa., Jan. 6. He was 74 years old. For 23 years he was superintendent of the Mabel furnace, and of late years had been chief clerk for the Shenango Furnace Co.

BURT O. GAGE died Jan. 10 at Warren, Mass., aged 75 years. He had since his thirteenth year engaged in mechanical pursuits. He was a master mechanic at 18 and since 1867 a designer and builder of pumps, being superintendent of the Warren Steam Pump Co. at the time of his death.



### May Postpone Time of Filing Income Tax Statements

WASHINGTON, Jan. 14.—The conferees on the War Revenue bill are making rapid progress, and hope to have the measure in shape for final passage by Feb. 1. The chief difficulty in the situation lies in the fact that by that time President Wilson will probably be headed for the United States, and it will be impossible to have the bill reach him in Europe. It will have to be held here until his return for his signature.

This means that it is doubtful whether the bill can become a law before Feb. 15. As all income tax statements must be filed, under penalty, March 1, this opens the way to serious complications. The Internal Revenue Commissioner's office cannot anticipate the exact terms of the bill in time to have the necessary 25,000,000 forms ready before March 1. It must wait until the bill has become a law. For its passage by the Congress does not, of necessity, mean that the President will sign it. This is not because the President is expected to have any objection to the bill as agreed upon by the conferees. But the final draft will require a week or more of careful scrutiny by the attorneys of the Treasury Department and the Attorney General's office to make sure that there are no technical errors to hamper its execution.

The tentative program of the Internal Revenue Commissioner's office contemplates asking special authorization from Congress to drop the March 1 filing and to substitute for it the filing of returns on May 1. The conferees have already agreed upon the policy of installment payments of the tax. The Internal Revenue Commissioner would take advantage of this fact by having a double payment become due May 1 instead of fixing the initial payment for March 1.

### General Manager Will Meet Strikers

WASHINGTON, Jan. 14.—Announcement is made by the Department of Labor that after a conference with James A. Smyth, United States Commissioner of Conciliation, the general manager of the Cambria Steel Co. has agreed to meet a committee of the striking shearmen and the employees have returned to work. According to the department's statement, the men of the shearing department had sought information from the company as to their standing under the new wage rate and basic 8-hr. day put into effect in the plant Nov. 1, 1918. When no information was forthcoming, the men struck.

The department also announced that James Purcell has been appointed as Government commissioner to mediate the strike of electricians and machinists at the Lackawanna Coal Co., Scranton, Pa., and L. R. Thomas for the Jessop Steel Co. at Washington, Pa. W. C. Miller is to mediate in the controversy of the employees of the Industrial Works, the Smalley General Co. and the Chevrolet Motor Co., Bay City, Mich. H. J. Skeffington at the plant of the Western Electric Co., Boston; C. W. Woodman for the building trade controversy at New Orleans and at the plant of the International Shipbuilding Co., Orange, Tex., and James Purcell at the plant of the Chambersburg Engineering Co., Chambersburg, Pa.

### Beehive Coke Output Increases

WASHINGTON, Jan. 14.—Beehive coke production in the United States for the week ending Jan. 4 jumped to 496,000 net tons, as compared with 440,000 tons in Christmas week. Despite this increase, however, it was a drop of 72,000 tons from the figures of the corresponding week of 1918. The shortage is still up to the Connellsville operators whose plants were operated only to 69.8 per cent of their capacity, labor shortage getting most of the blame for the deficit.

The by-product output suffered from the fact that many plants were shut down for repairs. The output during the week totaled 548,615 tons against 563,362 tons in the preceding week. It was almost 162,000 tons in excess of the preceding year's figures for the same week.

### Sheet Mill Conditions in the Youngstown District

YOUNGSTOWN, OHIO, Jan. 14.—While inquiries for iron and steel products of all kinds continue strong, only "hand-to-mouth" buying is being done. Sheet inquiry is especially heavy, one producer with an annual capacity of about 125,000 tons receiving sufficient inquiries within the past few weeks to insure steady maximum schedules for six months had the inquiries materialized into orders.

There has been some decrease in the rolling of sheet bars, but they are still being turned out in large tonnages. Figures are being quoted promptly on all inquiries, but the return business is not up to expectations. Jobbers apparently are buying only against virtually assured business, specifying immediate delivery. Little buying is being done at present to replenish depleted stocks.

Less difficulty is now being encountered in getting shipping space than in many months, a substantial improvement being shown in this condition. Labor difficulties in the East, however, have retarded shipments to the seaboard. Export shipments are being made, on the whole, though, with much more facility than at any time in the past six months.

### Common Stock Offered Employees of United States Steel Corporation at \$92

Judge E. H. Gary, chairman of the board, United States Steel Corporation, announced Tuesday that the price of common stock of the United States Steel Corporation offered to the employees for the year 1919 will be \$92. The privilege of subscribing must be exercised by Feb. 28, except that former employees now in the Army or Navy who return to the service of the corporation before July 1 will also be entitled to buy shares of stock.

Last year the subscription price was also \$92 and 95,437 shares valued at \$8,780,204 were taken by 43,258 subscribers. For 1917, when the price was \$107, there were 39,230 subscribers to 67,711 shares valued at \$7,245,077. In 1916 there were 25,143 subscribers to 50,269 shares valued at \$4,272,865. No stock was offered the employees in 1915. In 1914 they were given opportunity to subscribe to preferred as well as common and there were 29,590 subscribers to 43,330 shares of preferred, while 17,232 subscribers took 48,024 shares of common, valued at \$7,287,018.

### Onondaga Steel Co.

The Onondaga Steel Co., Inc., Syracuse, N. Y., "conservator of high speed steel scrap," by converting a plant's accumulation of high speed steel scrap into bars for use again, began the New Year with a series of conferences, and a banquet at the chamber of commerce, that city, at which S. S. Buckley, president of the company, presided. The meetings brought together the members of the manufacturing, sales and office departments. At the banquet the menu cards featured the cover of the forthcoming catalog.

The company has recently purchased 12 acres of land at Eastwood, on the outskirts of Syracuse, having good shipping facilities. A rolling mill and hammer shop are now in operation. A melting shop is finished and melting furnaces are being rapidly installed. Several additional buildings are planned for the near future, and by early spring it is expected that the entire plant will be removed from the original location in Syracuse.

The Cincinnati Association of Sheet Metal Contractors held its annual meeting at the office of the John Weigel Co., Jan. 8. The following officers were chosen to serve during the ensuing year: President, George Dietz; vice-president, August Meyer; secretary, John A. Hengger; treasurer, Charles Kobman; and the following directors: John Weigel, Frank Ort, and John Jansen.

The plant of the Virginia Chain Co. at Parkersburg, W. Va., was practically destroyed by fire Jan. 6, causing an estimated loss of \$100,000.

## NEW PRODUCTS AND MARKETS

### Plant Readjustments in Various Lines—Estimates of Our Business Prospects

Representative manufacturers of machinery and other iron and steel products have made the following appraisements of the immediate future of business, supplementing similar digests which appeared in THE IRON AGE of Jan. 2:

**Manning, Maxwell & Moore, Inc., New York.**—During the war practically 90 per cent of the output of all our factories was manufactured on direct or indirect Government orders. The products consisted principally of machine tools, electric traveling cranes, locomotive safety valves, injectors, gages, etc., in addition to certain other products we designed and manufactured especially for war purposes. While our production went for Government use the greater part of it was our regular product, and it will, therefore, be rather easy for us to change to a peace basis. While we are optimistic as to the future, we expect that the amount of new business will be limited during the readjustment period, the duration of which is, of course, problematical. We have already formed plans for expanding our regular lines of manufacture to fill the additional shop capacity built up during the war, and we expect to develop our export business through direct representation in the principal foreign countries.

**Rivett Lathe & Grinder Co., Boston.**—*Precision Tools.*—Approximately 80 per cent of our productive ability has been devoted to war work, either directly or indirectly. During all this time, however, we manufactured our standard peace lines. We are planning to add to our present line of machines one new machine.

**Southworth Machine Co., Portland Me.**—*Multiple Punching Machines, Turret Screw Machines, etc.*—Our plant will go back to its former lines, and it is hoped that we may be able to develop or take on new lines necessary to absorb at least 50 per cent of our total capacity.

**Porter Cable Machine Co., Syracuse, N. Y.**—*Lathes, Milling Attachments.*—We shall keep along our regular line, and we have under way some new lines to fill up any idle capacity, and we hope to be able to increase our plant some.

**Himoff Machine Co., 45 Mills Street, Astoria, N. Y.**—*Gear Cutting and Hobbing Machines.*—We expect to revert to our former business and add new lines to keep our extra capacity operating. It will take us at least a year to reach a 100 per cent schedule. Demand for work of our old product has had a remarkable increase.

**Zeh & Hahnemann Co., Newark, N. J.**—*Presses, Dies and Automatic Machinery for Working Sheet Metals.*—Our plant will go back to its former lines, namely, the manufacture of power presses. During the war period our equipment has been increased about 20 per cent, and the full equipment will be used for the normal work.

**Fitchburg Steam Engine Co., Fitchburg, Mass.**—*Four-Valve Engines, Horizontal and Vertical, etc.*—We are busy on 1400-hp. marine engines for the Emergency Fleet Corporation, which they desire to have us continue making, so that we shall have not less than 8 months' business ahead before we shall need to take up the question of what we shall do after we have finished this Government contract. The probability is that we shall go back to our former lines with one new line added.

**Marlin-Rockwell Corporation, 347 Madison Avenue, New York.**—Our New Haven plants will go back in part to old lines of business and in part to new. Our Norwich plant will take on new lines. The other plants of the corporation have not been working on war orders to any material extent.

**Farrar & Trefts, Inc., Buffalo, N. Y.**—*Maker of Boilers, Tanks, Patterns, etc.*—Our plate shop and foundry are both run as jobbing shops, and most of our

output has been used by makers of munitions; nevertheless, other customers have sent orders to take care of any cancellations we may have had. We have a regular product in oil country drilling boilers, and we have had and are having to work overtime to keep up with the demands. The only extensions we made to our plant during the war were to build a power house and a new foundry, increasing our capacity for single castings to 40 tons a day. We are working to full capacity, and have enough orders ahead to keep us going some time.

**Hartford Specialty Machinery Co., Hartford, Conn.**—Is planning to add new lines to its products.

**Veeder Mfg. Co., Hartford, Conn.**—*Tachometers, Counters, Die Castings, etc.*—We are already back to former lines; expect to add some new goods of similar lines.

**Trumbull Electric Mfg. Co., Plainville, Conn.**—*Electrical Supplies.*—Our plant will go back to its former line without a great deal of difficulty, and are planning to extend these lines, particularly our enclosed safety service line.

**Whitin Machine Works, Whitinsville, Mass.**—*Textile Mill Machinery.*—The outlook for our products in the United States for the first six months of 1919 is fair. As to export, we are doubtful, if with present time production costs as compared to those in England, it is going to be possible for us to sell textile machinery abroad.

**Vermont Farm Machine Co., Bellows Falls, Vt.**—Eighty per cent of our energies and machinery since 1914 have been given to making munitions, namely, 3-in. shrapnel, 3-in. high-explosive shells and 75-mm. shells, in the first place as sub-contractors for the Russian Government, then for the Bethlehem Steel Co., and lastly for the United States. We are planning to go back to our former lines; in fact, have kept them in line only in a small way during the four years we have been in the munition business, and we anticipate taking on several new lines which we are now negotiating for which will come in our special department of catering to the farming community. It will take at least six months to get back to the normal condition. We had been planning for several months that the war would be over next summer and were trying to prepare therefor. The sudden ending of the war was a surprise to everybody, we believe, including the United States Government officials. The principal markets are the United States and Canada. We have had quite a good many inquiries for export trade in the last 3 or 4 months. The trade in South America looks promising providing we have sufficient merchant marine to give it attention direct. Countries reached by Norway, Sweden and that portion of Europe for our class of goods there is very hard competition because labor and material are so much cheaper in those countries than in the United States. They can manufacture and put centrifugal cream separators in foreign countries and pay the freights for less than it costs to manufacture them in the United States at the present cost of labor.

**Bristol Brass Co., Bristol, Conn.**—We contemplate resumption along our former lines. This may branch out into other work, but as our additions here, although they have been relatively large for our concern, have not placed us where we are overbuilt for normal business.

**John Wood Mfg. Co., Conshohocken, Pa.**—*Range Boilers, Storage Tanks, etc.*—We are planning to get back into our former line of galvanized range boilers and pressure tanks and will probably branch out in a small way in several lines, which our experience with Government contracts has shown to possess possibilities in this coming peace period. While our manufacturing space has not been increased, we have added very considerable new and special equipment, both of which we hope to utilize from now forward. The maintenance of consumption in our line depends entirely upon the volume of residential building throughout the country, and we confidently do not expect a return to normal building conditions for at least 12 months.



# Machinery Markets and News of the Works

## PRICES READJUSTED

### Western Machine-Tool Builder Lowers Quotations

#### Moderate Business Being Done with Manufacturers Guaranteeing Against Reductions

A Middle Western builder of turret lathes has revised prices downward about 20 to 25 per cent, but explains that this is not, strictly speaking, a reduction, but an adjustment to the basis which existed before excessive war demand made it necessary to create artificial prices to discourage orders that could not be handled. A manufacturer of shapers has taken similar action, reducing its prices to conform to those quoted by its competitors. These companies marked up prices some time ago above those quoted by other manufacturers of the same types of machines.

Other builders of machine tools are making no change in their prices and assert that there will be no immediate reductions. The policy of guaranteeing purchasers against reductions for periods of three or six months is becoming more general, and it is probable that business could not be done now without some such guarantee.

A moderate business is being done in all markets, while in Chicago the activity is surprisingly good in view of existing conditions. Business in that market is said to compare very favorably with pre-war records. The Chicago & Alton Railroad has issued a list of about 20 tools, and a list from the Chicago & Northwestern Railroad is expected in the near future.

The Chicago, Milwaukee & St. Paul Railroad is reported to have placed a fair-sized order with a Cincin-

nati lathe manufacturer, and foreign inquiries in that market are showing improvement, these coming mainly from agents representing prospective purchasers in England and France, though some are being received from Italy, Spain and Scandinavian countries. Export trade is still hemmed about with restrictions, and shipping rates are also very high.

In the Cleveland market, prospective buyers are insisting upon lower prices, but tool builders insist that until costs of material and labor are reduced there can be no reduction on tools. The Chandler Motor Car Co., Cleveland, has bought a number of machines, and inquiries are pending from the Chevrolet Motor Co. for a round lot of tools for its various plants.

A machine-tool order from Belgium has been received by a New England builder.

Stock orders from agents abroad form a fair volume of business in the New York market, one such order from France totalling about \$100,000. A dealer booked a domestic order last week for about \$50,000 worth of tools. The Portsmouth Navy Yard will buy a list of about \$275,000 worth of tools, but many of these will probably be selected from the stock which the Ordnance Department of the Army has on hand.

No plan beyond that of Assistant Secretary Crowell in the IRON AGE of Jan. 2 has been announced for the disposition of the \$200,000,000 to \$300,000,000 worth of tools held by the Ordnance Department, but it is probable that they will be distributed by the tool builders themselves on a basis which will require about four years to move the entire stock.

Questions of contract adjustment are uppermost in the minds of buyers and sellers. An Eastern machinery concern is reported to have adopted a very liberal policy in cancelling contracts for standard tools without making any charge where buyers are objecting to making payments.

## New York

NEW YORK, Jan. 14.

A moderate amount of business in machine tools is being done, several buyers having appeared in the market within the past week to purchase lists of tools, which, though small, compare favorably with the average purchases of before the war times. A machine-tool dealer received one order aggregating about \$50,000, and more business is in sight from the same source. In practically all cases, sellers are now guaranteeing prices for at least six months. This means, that if there are reductions within that period, purchasers will receive a rebate on all machines they have bought equivalent to the reduction.

While there is much talk of lower prices, only one large builder of tools has as yet, so far as has been announced, made an important change. A Western builder of large turret lathes has made quotations since the first of the year which are 20 to 25 per cent lower than war-time prices quoted on the same machines. It is explained that this is not a reduction in price, in the true sense, but merely a lopping off of advances which were made during the period of most active demand to discourage orders that could not be filled. On some tools the decrease amounts to \$1,000 or more.

Purchasing agents are expecting lower prices, but the buying representative of a company which received quotations last week from a number of machine-tool builders

states that the prices quoted in every instance were identical with those which prevailed before the end of the war on the same equipment.

Export business is developing slowly, as buyers abroad have taken much the same attitude as those in this country—they are awaiting lower prices. However, companies which have established agencies abroad are receiving orders for shipments for stock and presumably these agencies are being protected against reductions in price until the machines are sold, or for a definite period. One manufacturer has received a stock order from France totalling about \$100,000.

The labor situation is being gradually adjusted at many of the machine-tool plants. Some of the excess labor is being laid off, the more efficient workmen and those who have records of long service being retained, in most instances without reduction in wages, but overtime work has been cut off. In common with all other manufacturing plants machine-tool shops have had their quota of inefficient workmen during the war, and with the majority of these eliminated from the pay-rolls, tools will be manufactured on a more economical basis, so far as labor costs are concerned, even though the basic wage rates are not immediately lowered. Some machine shops in New England are reported to be offering only 35c. an hour for machinists doing a class of work which commanded 60c. an hour during the war period.

In the Middle West a machine-tool plant which has done

a large war business was shut down early this month because of lack of orders, and a bill was introduced in the Legislature of the State proposing that the State Government take over the plant and operate it. No action on the bill was taken, but the plant soon afterward resumed operations, but on a greatly restricted basis.

No decision has been announced as yet as to the disposition of the \$200,000,000 to \$300,000,000 worth of machine tools which the Ordnance Department bought for war work, but it is expected that a plan will be adopted whereby these tools will be disposed of by the builders on the basis of one tool out of the Government's stock for each tool from a machine-tool plant. In this way it would require about four years to dispose of all of the tools the Ordnance Department has under order. It is understood, however, that this arrangement will not apply to purchases by other Government departments. For example, the Navy Department will purchase about \$275,000 worth of tools for the Navy Yard at Portsmouth, N. H., and a part of these will come from the Ordnance Department's stock. The Portsmouth Navy Yard also will require a number of cranes which in all probability the Ordnance Department will supply.

Among the purchasers who have placed orders for tools within the past week in this market are the Spicer Mfg. Corporation, South Plainfield, N. J., and the Brown-Lipe Chapin Co., Syracuse, N. Y. The Trego Motor Corporation, New Haven, Conn., has sent out a list of six tools. A New England company which has done a great deal of ordnance work during the war will, it is reported, engage in the manufacture of electric motors, but formal announcement of its plans has not been made. Several companies in the New York territory are contemplating the manufacture of automobile parts, and business from this source is one of the immediate prospects of the machine-tool trade. Most of these companies have their plans still in an immature state and are not ready to make known what they will do.

The crane business remains inactive. The Pennsylvania Railroad will issue a new list of cranes required for the new Marietta, Pa., locomotive shop, the plans for which have been changed in such a way as to make new specifications for cranes necessary. The original list called for about 20 cranes, including two of 200-ton capacity. The new list, it is expected, will call for approximately the same number of cranes. The Philadelphia & Reading Railroad has not closed for a 150-ton crane on which it recently asked for bids.

Preparations are being made by the Fulton Motor Truck Co., Farmingdale, Long Island, to increase its output of 1½-ton trucks. Contracts have been signed for doubling the plant. The Fulton company is preparing to do manufacturing of materials where necessary to insure a steady output. President Melhuish will shortly announce plans of the company for the establishment of several assembling branches.

The White Metal Mfg. Co., Jersey City, N. J., has been incorporated with a capital of \$500,000 by Theodore H. Smith, D. F. Edwards and Theodore Rurode.

Fire, Jan. 4, destroyed the boiler plant and fertilizer works of Swift & Co., Kearny Meadows, Kearny, N. J., with loss of about \$300,000. The building, 160 x 260 ft., was only recently completed. George M. Worman is general manager.

The Texas Co., 17 Battery Place, New York, is building a shop addition at its plant on Review Avenue, Long Island City, to cost about \$40,000.

The Blublaze Motor Specialties Corporation, New York, has been incorporated with a capital of \$50,000 by J. L. Raffetto, J. A. Holm, 550 West 146th Street, and J. W. Hill, 2 Rector Street.

The American Bosch Magneto Corporation, New York, has been incorporated with a capital of \$2,400,000, to manufacture magnetos, etc., absorbing the former German-owned Bosch Magneto Co., with works at Springfield, Mass., and Plainfield, N. J. S. F. Johnson, W. P. Sheppard and G. H. Hubner, 42 Broadway, are the incorporators.

The Brooklyn Rapid Transit Co., 85 Clinton Street, Brooklyn, N. Y., through its recently appointed receiver, Lindley M. Garrison, is planning for an expenditure of about \$9,000,000, to be secured through receiver's certificates, for extensions and betterments. New electric power stations with equipment for increased power supply are estimated to cost over \$3,000,000, while the remainder of the fund will be used for the purchase of new line and railroad equipment, construction work and miscellaneous improvements and extensions.

Alexander Reid & Co., 165 Charles Street, New York, manufacturers of engines, boilers, etc., have filed notice of change of name to the Dunbarton Iron Works, Alexander Reid & Co.

The Anaconda Copper Mining Co., 42 Broadway, New York, has authorized a bond issue of \$50,000,000. Of this amount, \$25,000,000, to be known as series A, will be issued at once, the proceeds to be used for the purchase of equipment for the properties of the Andes Copper Mining Co. and the Santiago Mining Co.

The New York Enamel Steel Co., New York, has been incorporated with a capital of \$10,000 by V. Skalar, R. Sims and N. Chusid, 110 West Ninety-seventh Street.

The American Balsa Co., 50 East Forty-second Street, New York, recently incorporated with a capital of \$1,000,000 to take over the American Balsa Corporation and the Welin Marine Equipment Co., Long Island City, is building a shop addition to the plant of the latter subsidiary at Hamilton Street and Vernon Avenue. The company is planning for the production of insulation products. In addition to these works, a plant is operated at Delawanna, N. J. George S. Lewis is president.

The Pulverized Fuel Equipment Corporation, New York, has been incorporated with an active capital of \$50,000 by H. G. Wenzel, Jr., F. R. Series and G. F. Handel, 123 Waverly Place, to manufacture furnace equipment, etc.

Simon & Mills, Inc., New York, has been incorporated with a capital of \$25,000 to manufacture iron and steel products. H. D. Mills, S. H. Wellman and J. D. Simon, 150 West Eighty-seventh Street, are the incorporators.

The Gem Safety Razor Corporation, 210 Eleventh Avenue, New York, has been incorporated with a capital of \$250,000 by F. H. Hoffmann and A. and M. Zinn to manufacture safety razors, etc.

The Hudson Sheet & Tin Plate Co., 15 Broad Street, New York, has increased its capital to \$1,300,000.

The Eastern Signal & Supply Co., New York, has been incorporated with a capital of \$51,000 to manufacture railroad equipment. It will take over the Eastern Signal Co. and the Atlas Battery Co., 30 Church Street. J. W. Waring, J. M. Mencer and E. M. Deems, 30 Church Street, are the incorporators.

The Federal Phonograph Co., Inc., New York, has been incorporated with a capital of \$100,000 by E. Larkin, D. E. Hubener and G. S. Wittson, 601 West 115th Street.

The Rathbone-Sard Co., Albany, recently suffered a loss of \$100,000 by the destruction by fire of three buildings of its foundry plant.

E. F. Musgrove, Inc., New York, has been incorporated with a capital of \$10,000 to manufacture sheet metal specialties. E. F. Musgrove, operating a works at 622 West Forty-seventh Street for the manufacture of tin ware, etc., is the principal incorporator. Other incorporators are L. I. and J. D. Musgrove, 3137 Onerville Avenue.

The Liberty Lamp Works, Inc., Harrison, N. J., has been incorporated with a capital of \$25,000 to manufacture electric lamps and scientific apparatus. Daniel J. Delaney and Morris H. Rosenberg are the incorporators.

The New Jersey Power & Light Co., Dover, N. J., has received permission from the Board of Utility Commissioners to issue bonds for \$64,000 for extensions and improvements at its power plant. E. E. Yensel is general manager.

At the sale of the property of the Bronze Powder Works Co., 803 Magnolia Avenue, Elizabeth, N. J., by A. Mitchell Palmer, Allen Property Custodian, Dec. 23, the offering was purchased by William C. Cabell, Passaic, at a price of \$217,500. The purchaser, it is understood, represents a New York concern which proposes to take an active interest in the operation of the works.

## Buffalo

BUFFALO, Jan. 13.

The extensive plant of the H. H. Shults Mfg. Co., manufacturer of equipment for post offices, Gowanda, N. Y., was destroyed by fire Jan. 8, including much machinery and occasioning a loss of \$225,000. It is stated that the company will rebuild.

The Aluminum Castings Co., Buffalo, has filed building plans for enlarging its plant at Elmwood and Hertel avenues and the Erie Railroad.

The capital stock of the Buffalo Bronze Die Cast Corporation, Buffalo, has been increased to \$131,000.

The Continental Can Co., Syracuse, N. Y., is having plans prepared for a plant to be erected in that city.

The Buffalo Slag Co., Ellicott Square, has filed plans for the erection of a two-story crushing plant at its works on Hamburg Turnpike, to cost about \$20,000.

The Titanium Alloys Mfg. Co., Sugar Street, Niagara Falls, N. Y., has had plans prepared for a two-story, reinforced-concrete addition, 50 x 50 ft.



Fire Jan. 5 at the plant of the Le Roy Plow Co., Le Roy, N. Y., destroyed a portion of the foundry with loss reported at \$12,000.

Hammond & Irving, Inc., Auburn, N. Y., recently incorporated, has commenced the construction of a one-story steel forge shop, 60 x 60 ft.

The Onondaga Steel Co., Syracuse, N. Y., is planning additions to its works at Massena Springs. It recently acquired over 10 acres of property there.

Effective Jan. 13, the United States Radiator Corporation, manufacturer of steam and hot-water boilers, Geneva, N. Y., resumed normal pre-war operations at its plant on Exchange Street. During the latter part of the war the works were devoted to the manufacture of trench mortars, and closed down following the suspension of hostilities. It is expected that capacity operations will be under way at an early date.

Fire Jan. 8 destroyed a large portion of the works of the Locke Insulator Mfg. Co., Lima, N. Y., with loss estimated at \$125,000. The works, which under normal conditions gives employment to about 150 persons, it is understood, will be rebuilt. Headquarters of the company are at Victor, N. Y.

The Bath Machine Works, Bath, N. Y., have been incorporated with a capital of \$150,000 to manufacture machinery and machine parts. V. A. St. John, F. L. Robinson and R. A. Watkins are the incorporators.

The North Country Shipbuilding Corporation, Ogdensburg, N. Y., recently organized, is holding in abeyance plans for its proposed new shipbuilding plant, to cost about \$150,000. E. J. Burns heads the company.

The Watertown Bag Machine Co., Watertown, N. Y., has been incorporated with a capital of \$100,000 by R. E. Cahill, C. R. Courtenay and A. C. Coty.

The Salamanca Panel Co., Elm Street, Salamanca, N. Y., manufacturer of veneer, sustained a fire loss Jan. 5 estimated at \$40,000.

## Philadelphia

PHILADELPHIA, Jan. 13.

While demand for machine tools is fairly good, many of the inquiries received are doubtless merely "price feelers." Prospective purchasers, after receiving quotations, advise that they will take no action for the present, but will wait to see whether reductions in prices materialize. Machine-tool sellers state that there will be no reductions, but as a protection to buyers they are willing to guarantee present prices for three or six months, and in some instances longer. There are rumors of concessions being made, but such reports lack confirmation.

Sellers are taking a firm attitude with regard to attempts to cancel. Where work on the tools ordered has not proceeded far, it is generally easy to effect a settlement which is satisfactory to buyer and seller and to the Government. Surprise is evidenced by the distributors that customers should think that all that is necessary to cancel a machine-tool order is to send in a cancellation order. Where the tools are partly completed the customers have been informed that the orders are not subject to cancellation without full compensation.

The total expenditure to be made by the Navy Department at the League Island Navy Yard, Philadelphia, including new construction work and operations now under way, will closely approximate \$20,000,000. Of this amount about \$5,000,000 will be used for the construction of a drydock, 210 ft. wide by 1064 ft. long, with arrangements for two vessels at the same time. The dock will be constructed to carry 35,000,000 gal. of water and provided with a high-power pumping system for emptying. A railway system will be built in connection with the structure. About \$3,000,000 will be utilized for the construction of two 900-ft. shipways, with six-story machine and structural shop, pattern and storage shops. The machine shop will be supplemented by a forge shop, 300 x 700 ft., a foundry over 500 ft. long, a galvanizing plant and other structures. About 10,000 persons are now employed at the plant.

The United States Needle Corporation, Philadelphia, has been incorporated with a capital of \$300,000 under Delaware laws by Henry Shaw, E. A. Van Loan and Narciso Coronna, Philadelphia.

The Quaker City Supply Co., Land Title Building, Philadelphia, has changed its name to the Quaker City Corporation.

The Pennsylvania Railroad, Broad Street Station, Philadelphia, has filed plans for seven new buildings at Greenwich Point, Philadelphia, to cost \$138,000, including a one-story machine shop to cost \$30,000.

The Savage Arms Co., Utica, N. Y., is said to be operating its Philadelphia plant at about 50 per cent of capacity. The company's works at Sharon are running at close to normal output.

The Ordnance Department is reducing production at the artillery ammunition department at its Frankford Arsenal, Philadelphia. The present working force will be reduced by over 1200 persons. Other departments at the plant, including gage, instrument and small-arms manufacture, are expected to be maintained under present conditions of operation.

The Aeronite Tire & Rubber Co., Trenton, N. J., has been incorporated with a capital of \$125,000 by Irving Elsenberg, E. T. Adams and Arthur T. Vanderbilt, Newark, to manufacture tires and rubber goods.

The National Electric Welding Co., Philadelphia, has been incorporated in Delaware, with capital of \$50,000 to manufacture welding apparatus. F. R. Hansell, Land Title Building, and E. M. MacFarland, Philadelphia, are the incorporators.

The Harrisburg Light & Power Co., Harrisburg, Pa., has issued \$210,000 in notes, the proceeds to be used in part for proposed extensions.

A boiler plant will be constructed by Bernard Schmidt, Thirteenth and Walnut streets, Harrisburg, Pa., in connection with a new baking plant.

## New England

BOSTON, Jan. 13.

A few orders that have emerged from the devastated regions of France have had the unusual and very welcome accompaniment of one-at least from Belgium for machine tools placed in the last week. Some war orders supposed for quick termination are now to be spread over a long period but not enlarged.

Bids have been received for a six-story \$7,000 storehouse at the plant of the North & Judd Mfg. Co., New Britain, Conn.

The Perfection Cooler Co., Stoughton, Mass., plans to erect a three-story factory, 58 x 108 ft., in the spring.

The Torrington Needle Co., Chicopee, Mass., has let a \$4,000 contract for factory alterations to its plant at Springfield.

The Hartford & Faience Co., Hartford, Conn., will soon start work on a one-story factory addition, 46 x 46 x 74 ft., to cost \$5,000.

Baer Brothers, 438 West Thirty-seventh Street, New York, contemplate the erection of a four-story factory building at Stamford, Conn.

The city of New Britain, Conn., plans an expenditure of \$1,000,000 on waterworks.

The Connecticut Silica Corporation, 25 Broad Street, New York, will probably put up a grinding mill at North Stonington, Conn., in the spring.

The Watson, Frye Co., Ltd., Bath, Me., has been incorporated with a capital of \$200,000 to operate a general machine shop and foundry. S. R. and O. F. Frye and M. J. Smith, Bath, are the incorporators.

The machine shop and foundry of Charles E. Babbitt, 440-42 Fore Street, Portland, Me., were destroyed by fire recently with loss on equipment estimated at \$20,000.

## Baltimore

BALTIMORE, Jan. 13.

The General Elevator Co., 428 East Saratoga Street, Baltimore, has purchased the plant formerly occupied by the Fautleroy Elevator Co., 107 South Eighth Street, and plans to install additional machines for the manufacture of elevators. George R. Zorn is in charge.

Theodore Leydecker will establish an automobile repair shop at 2931-2933 Frederick Avenue, Baltimore.

John J. Dubbelde, 724-726 North Howard Street, Baltimore, has let a contract for a one-story automobile repair shop, 56 x 70 ft., to cost \$4,000.

The J. S. Young Co., 2701 Boston Street, Baltimore, wants prices on 18 x 28 x 24 Beane vacuum pumps.

The B. F. Shriver Co., Westminster, Md., will build power-houses for canning plants at Westminster and New Windsor.

The F. H. Hooper Co., Glenarm, Md., wants prices on 75-hp. boilers.

The Southern Brass Works, Portsmouth, Va., will build a one-story addition, 40 x 67 ft.

The Norfolk-Hampton Roads Dry Dock & Ship Repair Co., Norfolk, Va., is reported to have let a contract to James

Stewart & Co., New York, for the construction of a large plant at Lambert's Point, Va. It is said it will cost several million dollars.

The Hance & Hart Co., Wilmington, Del., has been incorporated with a capital of \$100,000 by James F. Hart, Andrew J. Hance and others, to manufacture machinery and hardware.

The Eggleston Air-Cell Airplane Co., Washington, D. C., has been incorporated in Delaware with capital of \$1,000,000 to manufacture aircraft. Thomas L. Eggleston and E. P. Mooney, Washington, D. C., and William C. Chase, Atlanta, Ga., are the incorporators.

The Southern Brass Works, Portsmouth, Va., will commence the immediate erection of a one-story addition to its plant, 40 x 67 ft.

The Chowan Cooperage Corporation, Norfolk, Va., is planning for enlargements in its plant to increase the present capacity. The company recently increased its capital from \$100,000 to \$300,000.

Hackley Morrison, 204 Moore Building, Richmond, Va., is seeking prices on 40-hp. three-drum hoisting engines, 1½-yd. orange-peel buckets, etc.

W. F. Dunn, Portsmouth, Va., is said to be planning the erection of a one-story machine shop, 57 x 100 ft.

The foundry of the Columbus Iron Works Co., Columbus, Ga., was partially destroyed by fire recently with loss estimated at \$10,000.

The City Council, Atlanta, Ga., is planning an appropriation of \$70,000 for a municipal electric plant to be operated in connection with the city crematory.

The Bruce Dry Dock Co., Pensacola, Fla., is planning for a new dry dock, with ship repair and construction facilities, to cost about \$500,000.

The Fort Mill Lumber Co., Fort Mill, S. C., plans to build a machine shop, 40 x 80 ft., for repair work.

## Milwaukee

MILWAUKEE, JAN. 13.

The machine-tool trade is quiet and outside of a few scattering orders placed the past week, business is of light volume and confined to the most urgent needs. Inquiries continue in considerable number, but in only a few instances do these suggest round lot requirements, the bulk being for single tools or small lots. The principal source of inquiry is the automotive industry. Gas engine and tractor manufacturers appear to offer the most fertile market at this time.

Machine-tool production has shown a decline the past week or ten days due to the readjustment of business previously placed and predicated largely upon war work. However, the number of men released is relatively small and not enough to create any disturbance. Export inquiry is becoming more active although developments are rather slow.

The Allis-Chalmers Mfg. Co., Milwaukee, is erecting a new shop building at its main works in West Allis to be used exclusively for the manufacture of farm tractors in three types. F. W. Kamm is manager of the tractor department.

The Tinsel Mfg. Co., Manitowoc, Wis., has consolidated its toy manufacturing department, heretofore located at 51 Onelda Street, Milwaukee, with its main works at Sixteenth and Hamilton Streets, Manitowoc, consisting of a three-story, fireproof building, 60 x 100 ft. The equipment of the Milwaukee plant, embracing thirty-six stamping machines, has been moved to Manitowoc and some additional machines will be installed. Charles Strauch is retained as general superintendent. William C. Protz is president.

The Hayssen Mfg. Co., Sheboygan, Wis., manufacturer of special automatic machinery for wrapping bread and other foodstuffs, will build a two-story brick shop addition, 50 x 100 ft., at North Thirteenth Street, and St. Claire Avenue. W. C. Weeks, Sheboygan, is the architect.

The Milwaukee Forge & Machine Co., 340 Oklahoma Avenue, Milwaukee, which increased its capital stock from \$150,000 to \$250,000, is making the additional issue to provide working capital for its new machine shop and forge works, recently completed. The company specializes in forgings and other parts for gas, kerosene and oil engines and farm tractors. John Eckert is vice-president and treasurer.

The Federal Rubber Co. of Illinois, Cudahy, has tentative plans for a six-story fireproof addition, 250 x 300 ft., projected about two years ago, but delayed by war conditions. Work probably will be undertaken early in the spring. A. A. Frank is general manager.

The Aluminum Sign Co., Kewanee, Wis., has changed its

corporate style to the Leyse Aluminum Co. and increased its capital stock from \$75,000 to \$200,000 in preparation of a general expansion program. The company has plans for an addition, 60 x 120 ft., two stories and part basement, to be erected in the spring. When this is completed, it will broaden its line of products to include aluminum kitchen utensils and drawn ware and other goods in addition to signs and novelties. The officers are: President, A. B. Leyse; secretary and treasurer, Norman Leyse.

The Gerlinger Electric Steel Foundry Co., Milwaukee, commenced operations the past week in its new electric steel foundry, erected and equipped at a cost of \$35,000 at Sixtieth and National Avenues, in West Allis. The building is 84 x 190 ft., of brick and steel and the core-room is 30 x 100 ft. The equipment consists of a 3-ton Moore electric furnace, providing a daily capacity of 12 to 15 tons. The new shop adjoins that of the Gerlinger Steel Castings Co., Fifty-ninth and National Avenues, which employs a 3-ton electric furnace. The ownership of the two companies virtually is identical. They specialize in castings for the automotive industry.

The Manufacturers' Hardware Corporation, Milwaukee, has been incorporated with a capital stock of \$100,000 to manufacture hardware specialties, machinery, tools, etc. The incorporators are Frank Pettric and Lyle Beeman, the latter being president of the Universal Mfg. Co., 491 Broadway, Milwaukee, manufacturer of electric and automobile specialties, farm lighting plants, etc. The new company is not ready to announce details of its program.

The New Way Machinery Co., Eau Claire, Wis., manufacturing a five-purpose, general utility machine designed principally for farms, and embracing a power unit, concrete mixer, hoist, tractor and loader, perfected plans at the annual meeting of stockholders for a resumption of operations on an enlarged scale. The number of directors was increased from three to five. Officers were elected as follows: President, Michael Homes, Eau Claire; vice-president, Gustav Haas, Milwaukee; treasurer and general manager, Frank W. Kohnen, Eau Claire; secretary, Grant C. Haas, Milwaukee; director, Albert F. Hierseman, Eau Claire. Ernest F. Wege, founder and president of the company, has retired from all connection with the company. M. R. Van Chermendy, formerly of Chicago, is works manager and general superintendent.

The Townsend Mfg. Co., Janesville, Wis., maker of kerosene engines, has increased its capital stock from \$125,000 to \$175,000.

## Chicago

CHICAGO, JAN. 13.

Business is surprisingly good, considering the recent holidays, inventories and the cessation of war work. So far this month enough scattered orders, mostly for one or two machines, have been received to impart a good feeling to the trade. Salesmen who have been visiting Rockford and neighboring northern Illinois towns find most of the people busy and in an optimistic frame of mind. With machine-tool dealers activity may be said to be about normal, compared with pre-war times.

In Chicago, the Chicago & Alton list is being considered by the trade, which is the largest that has come from a railroad in a long period. Among the tools specified are the following:

- One 16-in. Norton toolroom lathe.
- One 16-in. x 8-ft. portable geared head lathe.
- Two 24-in. heavy duty lathes.
- Two 36-in. heavy duty lathes.
- Two 18-in. heavy duty lathes.
- One 18-in. crank slotter.
- Two 60-in. vertical drilling machines.
- One 5-in. forging machine.
- Two 32-in. crank shapers.
- One 100-in. heavy tire boring mill with two heads.
- One 36-in. vertical boring and turning mill.
- One 48-in. boring mill with two heads on cross-rail.
- One 48 x 36-in. x 10-ft. planer.
- One 42 x 36-in. x 16-ft. extra heavy frog and switch planer.
- One electric traveling crane and other items.

It is understood that delivery is to be at Bloomington, Ill. A list from the Chicago and Northwestern is looked for in the near future.

The local adjustment board of the Ordnance Department, of which E. A. Russell, District Chief of Ordnance Production, is the head, with headquarters at 155 East Superior Street, Chicago, is gathering information on which to base the adjustment of war contract claims. The board is one of 12 in the country. Mr. Russell is particular in pointing out that the Government did not cancel contracts, but requested their suspen-



sion, the procedure being to have work held up while a supplementary contract, having in view the cancellation of the original contract, was made effective.

About 900 contracts, all prime, were placed in the Chicago district by the Ordnance Department, many sub-contracts springing from these. Up to Jan. 7 about 376 contractors have accepted suspension notices, and of these 20 had filed reports stating their claims on blanks which had been provided by the board. When these claims have been thoroughly inspected and approved, the contractors will receive checks for the amounts to which they are entitled. So far no money has been paid out in adjustment. Should a contractor be dissatisfied with an award his recourse is to appeal to Washington.

Sub-contractors, whose dealings were not with the Ordnance Department, are to be cared for under a ruling from Washington, which allows a local board to advance money to a contractor to the extent of 75 per cent of his claim, thus placing him in a position to compensate a sub-contractor or one who has supplied materials or equipment. In such a case the contractor to whom the advance is made must agree that he will accept as final the judgment of the board in his case, and that he will not thereafter resort to court proceedings to obtain increased compensation for any reason. The local board does not accept a statement that a contractor owes certain money, but carefully checks the sub-contract.

It is hoped that all cases of claims for compensation, including those arising where there was no formal or written contract, may be settled by June.

Walter J. Conlon of the Conlon Electric Washer Co., maker of Western Electric washing machines and other appliances, has purchased a tract of 218,000 sq. ft. on the Baltimore & Ohio Chicago Terminal Railroad, in South Fifty-second Avenue, Cicero, Ill., on which will be erected a plant to cost \$250,000. Frank D. Chase, Inc., industrial engineer, Chicago, has begun construction work, the first unit of which will contain 75,000 sq. ft. Two additional units will be added later in the year. The products of the company will be distributed by the Western Electric Co.

The Foundation Co., 209 South La Salle Street, Chicago, has awarded sub-contracts for the two-story factory, 70 x 273 ft., to be built for the O'Malley-Beare Valve Co., at 231-249 East Ninety-fifth Street.

Francisco & Jacobus, 39 South La Salle Street, Chicago, have prepared plans for remodeling the interior of a six-story factory, 100 x 200 ft., at Washington Boulevard and Union Avenue, for the Peerless Light Co., 813 West Adams Street.

The Acme Boiler & Tank Co., 1017 West Forty-eighth Street, Chicago, will build a one-story addition, 52 x 85 ft. to its factory to cost \$10,000. Contracts have been let.

The Maibohm Motors Co., Racine, Wis., whose plant was recently destroyed by fire, is investigating Mishawaka, Ind., as a location for new works. Inquiries have been made as to housing facilities, available labor, approximate wage scale, transportation facilities, electric light, power, water rates, taxes, etc.

The Lipman Refrigerator Car & Mfg. Co., Beloit, Ill., E. L. Lipman, president, has been incorporated with a capital stock of \$500,000, of which \$300,000 will be used for its factory at South Beloit, Ill. The company is represented by A. B. Melille, 112 West Adams Street, Chicago.

The Hassell Iron Works, Colorado Springs, Col., will soon begin work on an addition to cost \$50,000 to give additional facilities for overhauling and repairing machinery and engines. The company has been manufacturing marine hoisting engines for the Government. W. W. Hassell is president.

The Sioux City Tire & Mfg. Co., Sioux City, Iowa, will build a two-story addition, 25 x 80 ft., to cost \$10,000.

The Standard Four Tire Co., Keokuk, Iowa, will soon prepare plans for the erection of a two-story addition, 20 x 50 ft.

Fire, Jan. 2, destroyed the plant of the Pacific Mutual Door Co., Midway, Minn., with loss estimated at \$75,000. The company is operated by the Central Warehouse Co. G. A. Williams is manager.

The Graham Tire & Rubber Co., Minneapolis, Minn., has been incorporated in Delaware, with capital of \$50,000 to manufacture tires and rubber products. Frederick, H. L. and L. D. Graham, Minneapolis, are the incorporators.

The J. M. Hays Wood Products Co., Jefferson City, Mo., will build an addition, 40 x 300 ft., for a machine shop and general manufacturing, at a cost of about \$15,000.

The Equipment Corporation of America, Chicago, a Delaware corporation, has increased its capital from \$750,000 to \$1,050,000.

## Pittsburgh

PITTSBURGH, Jan. 13.

The Pittsburgh Visible Spark Plug & Mfg. Co., 460 Melwood Avenue, Pittsburgh, will continue operations at its plant for the production of screw machine products and tools, developed during the war. Beyond its spark plug manufacture, the works will be devoted to the machining of small castings and forgings and the production of special machine parts. Edward L. Suess is president.

The Pittsburgh Aeroplane & Motor Co., Pittsburgh, is planning for the erection of a new five-story plant, 200 x 300 ft., at Edensburg, Pa., to be equipped for the manufacture of aircraft and motors. C. L. Sanford is president.

The L. D. Vaughn Igniter Co., Grafton, W. Va., is contemplating the establishment of a plant for the manufacture of steel ties for mine use and similar specialties.

Fire, Jan. 6, destroyed a portion of the plant of the Virginia Chain Co., Parkersburg, W. Va., with loss reported at \$100,000. It is understood that the plant will be rebuilt.

The United Concrete Brick Co., Warren, Ohio, is considering the erection of a one-story plant at Wheeling, W. Va.

The Monongahela Valley Traction Co., Fairmont, W. Va., is building one of the largest electric power plants in the State at Rivesville. It will have a rated capacity of about 50,000 kw. and is expected to be ready for the installation of generating and auxiliary equipment at an early date.

## Detroit

DETROIT, Jan. 13.

The Ordnance Department has awarded or approved the following contracts to Michigan concerns since the signing of the armistice: Albion, Union Steel Products Co., 200,000 steel rings, \$6,500; Detroit, Detroit Copper & Brass Rolling Mills, brass cartridge case disks, \$94,500; Briscoe Mfg. Co., lower detonator casings and retainer, \$50,640; Hudson Motor Car Co., tractor transmissions and spare parts, \$300,000; Ireland & Matthews Mfg. Co., trench mortar shells, \$1,212,500; Ford Motor Co., spare and replacement parts for 125-mm. howitzer caissons, \$500,000; Kelsey Wheel Co., spare and replacement parts for wheels, \$342,986; Kales Stamping Co., spoke shoe plates for artillery wheels and replacements, \$6,529; Detroit Lubricator Co., mechanical oil feeds, \$27,550; Packard Motor Car Co., 10 trucks, \$57,120; Ford Motor Co., 8286 ambulances, \$4,182,940; Packard Motor Car Co., one truck and hoist, \$5,607; Federal Motor Truck Co., 800 trucks, \$2,594,673; Detroit Range Boiler Co., 1000 barrels, \$7,500; Welded Steel Barrel Corporation, 4500 barrels, \$33,750; Gladstone, Marble Arms & Mfg. Co., spare parts for United States rifles, \$244,500; Grand Rapids, Keeler Brass Co., 500,000 cleaning rods; Muskegon, Muskegon Boiler Works, overflow pipes; Pontiac, Detroit Weatherproof Body Co., tops for artillery tractors, \$516,594; Port Huron, Mueller Metals Co., round brass rods, \$64,317.

The Kindel plant at Grand Rapids, Mich., formerly owned by the Kindel Bed Co., will be turned into a furniture factory Feb. 1 as the result of a deal closed by F. Stuart and L. S. Reynolds of the Imperial Furniture Co., and Clarence S. Baxter, secretary-treasurer Grand Rapids Chair Co. Mr. Reynolds has secured a \$1,000,000 contract for the manufacture of phonographs. It is stated that 300 men will be employed. Organization of the new company will be completed prior to Feb. 1 and a name selected. Mr. Reynolds will be secretary-treasurer and will retire from the Imperial Furniture Co.

F. L. Spring & Co., a new concern, has begun operations at Allegan, Mich. F. L. Spring, Indianapolis, is general manager and the inventor of the defender spring shock absorber, which will be the product of the company.

The Flower-Stephens Mfg. Co., Clayton and Parkinson avenues, Detroit, has awarded a contract to A. R. Yops & Co., Kresge Building, for a one-story addition to its foundry, 37 x 150 ft., to cost \$18,000.

The Cass Technical High School, Henry Street, Detroit, has commenced the construction of a one-story and basement electric light and power plant, 50 x 97 ft., to cost \$125,000. The Board of Education is in charge of the work.

The Grand Rapids Brass Co., Grand Rapids, Mich., will take new bids for the proposed addition to its plant, 90 x 100 ft., on Sentner Avenue.

The Romeo Foundry Co., Port Huron, Mich., has been reorganized as the Holmes Foundry Co., with a capital stock of \$1,250,000, to supply subsidiaries of the General Motors Corporation with castings for tractors. L. A. Holmes is president; L. G. Blunt, vice-president and general manager; P. C. Peck, secretary and treasurer, and W. F. Hooper, superintendent.

## Cleveland

CLEVELAND, Jan. 13.

Secondhand machinery, amounting to about \$250,000, has been placed on the local market. It includes the equipment of the plant of the Rl-Chard Automobile Co., but is mostly machinery purchased for Government work, the largest part of which had been used very little. It is stated that this is being offered at attractive prices compared with those for new machinery, and appears to be moving quite freely. There is little demand for new machinery, but manufacturers look for more activity the latter part of the month. Buyers are quite generally insisting on lower prices, but machinery manufacturers claim that until the costs of material and labor are reduced, no reduction can be made. The Chandler Motor Car Co., Cleveland, has purchased a number of machines and inquiries are pending from the Chevrolet Motor Co. for a round lot of machine tools for its various plants.

Machinery manufacturers and dealers are having considerable trouble adjusting canceled contracts. Some buyers object to paying the cancellation charge, which, in the case of some, includes only an overhead charge for the manufacturer and dealer, no profit being figured on. Manufacturers generally are apparently trying to adopt a liberal policy in the matter of cancellations and one large Eastern machinery house is canceling contracts for standard machines without making any charge in cases where buyers are objecting to making payments.

The printing press industry has become quite active since the close of the war. In the past few weeks a large Cleveland manufacturer of printing presses has taken a good volume of orders for shipment to France, a considerable portion going to cities that were devastated during the war. Previous to the war a large share of the printing press equipment used in France came from Germany.

The Toledo Screw Products Co., Toledo, Ohio, which has been engaged in shell work, since early in the war, for the Allies and the United States, has been instructed to discontinue the manufacture of shells Jan. 31 and will turn its plant over to screw machine products.

The Willys-Overland Co., Toledo, which has been operating on a large variety of Government work, has resumed the manufacture of automobiles, starting production on the basis of 300 cars per day.

The Truscon Steel Co., Youngstown, Ohio, will enlarge its plant by the erection of a fireproof machine shop, 80 x 400 ft.

The Ohio Corrugating Co., Warren, Ohio, plans to erect a \$40,000 factory building.

The Erie Specialty Co., Erie, Pa., has completed an extension to its plant, 53 x 165 ft.

The Craftsman Tool Co., Conneaut, Ohio, is planning to manufacture chucks in addition to its regular line. Extensions to its plant are contemplated.

The William Edwards Co., Cleveland, is inquiring for a 12 in. x 5 ft. lathe.

The Chase Foundry & Mfg. Co., Columbus, Ohio, is inquiring for a 30 to 36-in. vertical boring mill and an axle lathe 7 ft. between centers.

## Cincinnati

CINCINNATI, Jan. 13.

It is reported that the Chicago, Milwaukee & St. Paul Railway Co., has placed an order with a lathe maker in this section for a number of lathes to be shipped at the earliest possible date. Foreign inquiries for machine tools, these inquiries are principally from England and France, although some are from Italy, Spain and the Scandinavian countries. Portable electric drilling and grinding machines are also in demand abroad, but the principal trouble is in getting permits to ship machines for which orders have been received. The red tape that shippers had to contend with before the armistice was signed is still uncut, and manufacturers who are reaching out after European business are anxious to know when these annoying restrictions will be removed.

More than passing interest is being taken in the South American market for machine tools and other machinery. Heretofore it was generally thought that the railroads were the only users of machine tools, but scattered inquiries received indicate that this is not correct.

The G. A. Gray Co., Cincinnati, maker of planing machines, is building additions to its machine shop and foundry which will increase its present capacity nearly 25 per cent. Nearly all the necessary equipment has been purchased.

The American Metal Products Co., 1225 Budd Street, Cincinnati, whose organization was noted several months ago, is adding equipment to its plant for the manufacture of standard screws and screw machine products. Alfred T. Kreimer is president and Fred G. Jackson, general manager.

The Automobile Accessories Co., Northside, Cincinnati, contemplates the manufacture of cycle cars. No details have yet been given out.

The Davis Welding & Mfg. Co., Cincinnati, has leased part of a manufacturing building at Gest and Summer Streets that will be used for the manufacture of automobile tanks. The company's headquarters are at 1543 Queen City Avenue.

The Long & Allstater Co., Hamilton, Ohio, has about completed arrangements to take over the former Buckeye Marble Co.'s plant in West Hamilton. This branch will be used for the manufacture of agricultural machinery and will enable the company to devote its High Street plant exclusively to the manufacture of punching and shearing machinery.

The Ruthman Machinery Co., Cincinnati, has been incorporated with \$10,000 capital stock by Edward Ruthman, Louis J. Dolle, and others. It operates a plant at Front and Pike streets for the manufacture of dies, tools, jigs, etc.

It is rumored that the Victor Rubber Co., Springfield, Ohio, contemplates a further addition to its plant for the manufacture of automobile tires.

The Columbus Bolt Works Co., Columbus, Ohio, has acquired a site adjoining its plant, and has tentative plans under way for an addition.

The Bridgeport Machine Co., Augusta, Kan., has purchased the plant of the Under-Reamer Tool Co., Marietta, Ohio, maker of oil well equipment. The Marietta plant will be enlarged at an early date.

## Indianapolis

INDIANAPOLIS, Jan. 13.

By a contract with the Chamber of Commerce, Peru, Ind., the Bryan Harvester Co., Albuquerque, N. M., capitalized at \$2,000,000, will move its plant to Peru, occupying factory buildings heretofore used by the Hoffman-Smith Co. The company manufactures a large tractor and a harvester machine.

The Indiana Power & Water Co., Edwardsport, Ind., has awarded contracts for improvements to cost \$150,000. It will supply light and power to adjacent Illinois oil fields.

Much new machinery was destroyed in a fire, Jan. 10, at the United States Encaustic Tile Co.'s plant, Indianapolis. The loss was estimated at \$40,000.

The Highway Iron Products Co., Ligonier, Ind., is in the market for a 16-in. back geared shaper, punching machine with 36-in. stroke and 1-in. capacity, shear and several saws, including a high-speed friction saw.

Max Zeigler & Brothers, Muncie, Ind., are in the market for two alligator shears.

## St. Louis

ST. LOUIS, Jan. 13.

Eldon Davis, Los Angeles, Cal., will erect a packing plant at Miami, Okla., requiring about \$20,000 worth of refrigerating and cold storage machinery.

George Lewis, Homer, La., is receiving bids for equipment for a cotton gin, corn grinding plant and power plant.

The Vicksburg Compress Co., Vicksburg, Miss., capital \$350,000, S. C. Ragan, George H. Hackett and others interested will equip a compress plant.

The Sapulpa Compress Co., Sapulpa, Okla., J. G. Leonard, manager, will rebuild its burnt plant and is receiving bids for machinery.

The Altenburg, Mo., Light & Power Co. will rebuild its electric light and power plant recently burned.

Yale, Okla., George B. Gelder, city clerk, will increase its electric light and waterworks capacity. Pumps, engines, boilers, generators and other equipment will be needed.

The University of Missouri, Columbia, Mo., A. Ross Hill, president, will erect a machine shop. J. P. Jamieson, Security Building, St. Louis, is in charge as engineer-architect.

The Pan American Refining Co. will construct and equip with pumping stations an 8-in. oil pipe line from West Tulsa to Quay, Okla.

The Griffin Wheel Co., Kansas City, Mo., will erect an addition to its plant.

The Burlington Railroad, W. L. Breckenridge, chief engineer, Chicago, Ill., will equip a mechanically operated



coal chute at St. Louis requiring about \$12,000 worth of machinery.

Kingfisher, Okla., H. M. Cleaver, city clerk, will install additional waterworks plant equipment, including motor driven, centrifugal fire pump and other machinery.

R. W. Harris and associates, Meridian, Miss., are planning for the establishment of a plant for the manufacture of veneer specialties. Equipment, including lathes, veneer machinery, etc., will be purchased.

The Sand Stone Coal & Mining Co., Wilburton, Okla., capital \$50,000, T. W. Choat, John Moore and others interested, is in the market for coal mining, hoisting and power plant machinery.

St. Paul's College, Concordia, Mo., Charles F. Ray, Merchants Laclede Building, St. Louis, Mo., engineer, is in the market for power plant equipment for isolated installation.

Lee L. Moore & Co., Oliver Building, Pittsburgh, Pa., John F. Stephens, secretary, will equip a plant at Tulsa, Okla., for the manufacture of tubular steel pipe derricks for drilling oil wells and will install 100-lb. hammers, drill presses diameter up to 1 in., gas engine, chain blocks, etc. The output will be 15 derricks per day.

The Polar Wave Ice & Fuel Co., St. Louis, Mo., will build a branch ice plant to cost, with equipment, about \$200,000.

The General Motors Corporation, Detroit, Mich., will equip a three-story factory at St. Louis to cost \$1,000,000.

The Clarksdale Machinery & Supply Mfg. Co., Clarksdale, Miss., has increased its capital by \$90,000 and changed its name to the Clarksdale Machinery Co. It will enlarge its plant.

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## Texas

AUSTIN, Jan. 11.

The Texas-Gulf Refining & Pipe Line Co. will build an oil refinery at Wichita Falls. J. H. Parker, Los Angeles, Cal., is president.

The Magnolia Petroleum Co., Beaumont, will make improvements and additions to its oil refinery to cost approximately \$1,000,000. A plant to manufacture 12,000 tin cases a day will be equipped. E. Plumly is manager.

The Texas Trap Rock Co., San Antonio, has increased its capital stock from \$80,000 to \$100,000 and will purchase additional machinery.

## California

LOS ANGELES, Jan. 7.

The Keystone Iron Works, 973 North Main Street, Los Angeles, manufacturer of posts, hydrants, etc., is having plans prepared for a new plant on Sante Fe Avenue and Thirtieth Street to cost about \$100,000. It will consist principally of machine shop, foundry and manufacturing building. Albert C. Martin, Higgins Building, is architect.

The French-American Shipbuilding Co., Los Angeles, is completing arrangements for a shipbuilding plant at San Pedro, Los Angeles Harbor, for building steel-concrete vessels. It is proposed to construct four shipways, with shop buildings, etc.

W. H. Clark and associates, Los Angeles, are planning the erection of a large electric power plant near Holbrook, Ariz., to serve mining properties being developed along the new line of the Navajo Railroad.

The San Diego Shipbuilding & Dry Dock Co., San Diego, Cal., has been granted permission by the City Council to

establish a shipbuilding and repair plant on the tidelands, between First and Fourth streets. The works will cost over \$100,000, in accordance with an agreement with the city. Adam F. Weckler is president.

The Central Welding Works, Los Angeles, has filed notice of organization to operate a plant at 111 West Eleventh Street. Thomas Pylar, 1023 Blaine Street, heads the company.

Rosenburg & Co., East Third Street, Los Angeles, machinery merchants, specializing in used equipment, have arranged for the erection of a new building at 303-5 East Third Street, opposite their present location, for increased facilities. It will be 65 x 120 ft. and will be provided with machine shop, repair shop, offices, etc.

The Pacific Oil & Lead Works, San Francisco, will build a one-story addition, 25 x 45 ft., to its plant on Violet Street, Los Angeles.

The Liberty Iron Works, Sacramento, will continue the manufacture of aeroplanes. It has had inquiries from foreign countries and expects to obtain contracts.

The Union Ice Co., San Pedro, has let a contract for a \$50,000 ice and cold storage plant. The machinery to be installed will cost about \$30,000.

## The Pacific Northwest

SEATTLE, Jan. 7.

The machinery trade is experiencing a very quiet period, due to the practical cessation of lumber activities in certain sections, and lack of buying by shipyards and allied industries.

The labor situation is still very unsettled, with constant rumors of strikes and walk-outs. The extreme shortage has been materially improved by the cessation of spruce work, and the consequent release of several thousand men for other lines.

Local wooden shipbuilding companies are looking to the expected demand for auxiliary powered schooners for their future business, which have proved successful in certain lines of trade on the Pacific.

The past year the Willamette Iron & Steel Works, Portland, fitted out 17 8800-ton steel steamers, finished and tested 127 boilers and delivered 48 additional boilers to various corporations.

The Long Bell Lumber Co., Kansas City, has taken over 87,000 acres of timber land near Klamath Falls, Ore., and is reported to be preparing to erect a mill.

E. B. Kingman and A. W. Miller, Eugene, Ore., are incorporating a company with a capitalization of \$800,000, and will erect a sawmill near Eugene with a daily capacity of 100,000 ft.

L. J. Weatherwax, Aberdeen, Wash., will establish a plant in Aberdeen to build small boats.

The Martyn Bolterup Machine Co., Vancouver, Wash., recently established in that city, is enlarging its business to take care of recent orders received from shipyards in the East. It manufactures a special machine used in bolting-up.

It is announced that the contracts secured by the Foundation Co., Tacoma, Portland and Vancouver, B. C., from the French Government, will total \$200,000,000 instead of half that sum, as first announced. Completion of negotiations awaits the approval of the United States Administration. The contracts call for 174 steel cargo vessels.

The plant of the Olympia Shingle Mill Co., Olympia, Wash., was destroyed by fire recently with a loss of more than \$20,000. It will be rebuilt immediately.

The Northwest Steel Co., Portland, has awarded contract for a one-story marine machine shop building, 50 x 183 ft., costing \$7,000.

The Ashland Iron Works, Ashland, Ore., manufacturer of ship anchor windlasses and ship hoists, has been purchased by George W. Dodson, secretary and manager of the plant.

E. T. Pybus, Wenatchee, Wash., operating an automobile repair shop, will construct a new plant, 50 x 120, costing about \$5,000. Machinery for heating tires and springs, and a complete acetylene welding plant, will be installed.

The City Iron Works, Portland, will construct a number of steamship smokestacks for vessels being built in this vicinity. Up to a few months ago the plant had been devoted to the construction of structural iron.

S. E. Hall, Harrisburg, Ore., is building an addition to his machine shop, 14 x 50 ft.

The Pacific Coast Grinding & Machinery Co., Seattle, has recently been organized by Alexander and Gerhard Pearson of the Pearson Construction Co., and contemplates the construction of a plant to cost \$200,000, to manufacture a new type of pipe wrench.

## Canada

TORONTO, Jan. 13.

The Fox Chain Co., which recently took over the building formerly used by the Ford-Smith Machine Co., on Princess Street, Hamilton, Ont., is making rapid progress in the installation of machinery for the manufacture of tire chains. New York capitalists are behind the new concern. Its board of directors includes Frank A. Fox, president; Wilfred North, New York, vice-president; Frank G. Cornish, New York, secretary-treasurer, and T. C. Binkley, Hamilton.

The Pendrith Machinery Co., Ltd., Toronto, has been incorporated with a capital stock of \$40,000 by George T. and Thomas G. Pendrith, Chadwick Mather and others to take over the business now carried on by Lina J. Pendrith, under the name of Pendrith Machinery Co.

The McPherson Mfg. Co., Ltd., Hamilton, Ont., has been incorporated with a capital stock of \$50,000 to take over the business and plant of J. A. McPherson, general iron and steel manufacturer, galvanizer, etc.

William Kennedy & Sons, Ltd., Owen Sound, Ont., is completing an addition to its plant, 50 x 100 ft. of steel and concrete, which will be equipped with a 20-ton electric traveling crane. It will be used as an erecting shop for marine machinery now being manufacturer at the plant.

The plant of the Belgo-Canadian Pulp & Paper Co., Shawinigan Falls, Que., was damaged by fire Jan. 5, with a loss estimated at \$100,000.

The Levis Files Co., Commercial Street, Levis, Que., will build a factory to cost \$5,000, and is in the market for special machinery.

L. C. Robinson, Calof Building, Shaunavon, Sask., will install a complete vulcanizing plant and is asking for prices on equipment.

Hutchinson Brothers & Co., Ltd., 409 Bay Street, Victoria, B. C., is making preparations for the erection of a foundry to cost about \$50,000. D. C. Hutchinson is general manager.

Sheldons, Ltd., Galt, Ont., manufacturer of fans, blowers, ventilating equipment, etc., will build an addition to its plant to cost \$18,000. J. Webster, Crombie Street, has the general contract.

The lumber yards and mill owned by the Pioneer Lumber Co., Leader, Sask., was destroyed by fire with a loss of \$30,000.

The Grand Prairie Electric Light Co., Grand Prairie, Alta., will purchase a new engine and install an alternating current system.

Butler & Berbnor, Holstein, Ont., will install electrically driven equipment in their broom and handle factory and are asking for prices on motor, machinery, wiring and general equipment.

The American Can Co., Ltd., 535 Railway Street, Vancouver, B. C., will make improvements to its plant costing \$7,000.

C. J. Halliday, Box 322, Chesley, Ont., is in the market for a 10 hp. Gray marine engine.

E. G. Cable, Richmond Hill, Ont., is asking for prices on well drilling equipment and water pumps.

## Government Purchases

WASHINGTON, Jan. 13.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, at an early date under schedules as follows: Schedule 3636, one 10 x 30 in. universal cylindrical grinder; one 16 x 19-in. plain cylindrical grinder, miscellaneous No. 3 keyseaters with base plate and gearing; two 7 x 32-in. bench lathes; one belt-driven precision lathe; two universal turret lathes; four double spindle centering machines; two motor-driven, die-sinking machines; four sensitive bench drilling machines; three upright stationary back-geared drilling machines; one bench, hand, belt-driven milling machine; one 26 x 90-in. single travel head motor-driven shaping machine; one 26 x 8-in. single surfacing machine, all for Boston.

For the eighteenth year since Crane Co. adopted the plan of making cash Christmas gifts to its co-workers the company last month distributed approximately \$1,600,000, making a total for the 18 years of \$10,000,000. The basis of distribution for 1918, as for the last 16 years, was 10 per cent of the year's earnings for each worker. About 13,000 co-workers shared in this distribution throughout the offices and works in Chicago and Bridgeport, and the offices, warehouses and salesrooms in 53 cities of the United States and Canada.

## NEW TRADE PUBLICATIONS

**Taps and Dies.**—Greenfield Tap & Die Corporation, Greenfield, Mass. Catalog No. 40. Pages 288, 4¼ x 7¼ in. This catalog supersedes G. T. D. general catalog No. 37 and all others formerly issued under the names of the constituent companies of this corporation, viz.: Wells Bros. Co., Wiley & Russell Mfg. Co., F. E. Wells & Son Co., A. J. Smart Mfg. Co. Devoted to a complete line of taps and dies, screw plates and reamers. The catalog is profusely illustrated. A number of useful tables are given, including tap drill sizes for different standard screw threads, screw thread data, diameters of standard and special machine screws, taps for standard and special machine screws, drill sizes for pipe taps, decimal equivalents, allowances for fits, etc.

**Elevating and Conveying Machinery and Equipment.**—Gifford-Wood Co., Hudson, N. Y. Catalog No. 18. Pages 480, 6 x 9 in. Cloth binding. Concerned with a line of coal elevating and conveying machinery, ice handling machinery, ice tools, general elevating and conveying machinery, sheet and structural steel work and equipment for power plants, coal tipples, cement mills, coke plants, chemical works, pulp and paper plants, rolling mills, coaling stations, grain elevators, retail coal yards, ice houses, quarries, sand and gravel plants, manufacturing plants, storage warehouses, etc. Numerous illustrations of the individual equipment and complete installations of elevating and conveying machinery are given.

**Lathe Attachment.**—Paschall Tool Co., Inc., Long Beach, California. Booklet. Describes a tool post attachment, designed for mill work of a light character such as axle squaring, key cutting, slotting and grooving. Views showing the various uses of the attachment are given.

**Well Strainer.**—Carbo Steel Products Co., Chicago. Leaflet. Describes and illustrates a self-washing, gravity-cleaning strainer for oil wells.

**Fence Supports.**—Carbo Corporation, Rand - McNally Building, Chicago. Folder. Describes and illustrates a fence supporting system. The features emphasized are the placing of the metal posts without the use of a spade, and the construction of the supports between any two terminals, designed to spring with the fencing, thus keeping the heavy forces on the reinforced end terminals.

**Ball Bearings.**—Hess-Bright Mfg. Co., Philadelphia. Book, pages 108, 6 x 9 in. Gives the history of the development of ball bearings. Views are given of automobiles, automobile parts, airplanes, machine tools, flour and feed milling machinery, wood-working machinery, electrical machinery, locomotives, etc., in which the company's products are used.

**Taps, Dies and Reamers.**—Butterfield & Co., Inc. Derby Line, Vermont. Catalog No. 17. Treats of a line of taps, dies, screw plates, blacksmith and pipe stocks and dies, tap wrenches and reamers. Views of the individual tools and tool sets are given.

**Silos.**—C. C. Fouts Co., Middletown, Ohio. Catalog. Concerned with the "Duro" iron silo. The story of this silo is given and the advantages claimed are pointed out. The details of construction are shown and views of silos on farms are included.

**Tire Press.**—Excelsior Tool & Machine Co., St. Louis. Circular No. 34. Relates to a press designed for forcing solid rubber truck rims on and off the wheels. A view of the press is included.

**Heating Unit.**—Cutler-Hammer Mfg. Co., Milwaukee. Pamphlet. Concerned with an electric space heating unit, in shape like that of a two foot rule, intended for use in heating crane and hoist cabs, small offices, locations where an open flame would be dangerous, for keeping oils free to flow, drying rewound motor armatures, etc. Illustrations of installations are given.

**Marine Pumps.**—A. S. Cameron Steam Pump Works, 11 Broadway, New York. Bulletin No. 7205. Devoted to a line of steam pumps for marine service. Sectional and complete views are shown.

**Heaters and Soldering Irons.**—American Electrical Heater Co., Detroit. Two bulletins. Bulletin No. 1 is devoted to the description of an electric soldering iron made in three sizes. Bulletin No. 2 describes a line of electric air heaters. The devices are illustrated.

**Conduit and Cable Clamps.**—Diamond Expansion Bolt Co., 90 West Street, New York. Bulletin No. 120. Treats of a line of conduit cable clamps for electric wiring on ships, fortifications and buildings. Views of the clamps are given.



# Current Metal Prices

On Small Lots, from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general headings of "Iron and Steel Markets" and "Metal Markets."

## Iron and Soft Steel Bars and Shapes

Per lb.

### Bars:

Merchant iron, base price	4.57c
Refined iron, base price	5.32c
Burden's H. B. & S. bar iron, base price	6.40c
Burden's best bar iron, base price	6.60c
Norway bars, base price	20.00c

### Soft Steel:

¾ to 1½ in., round and square	3.97c
1 to 6 in. x ¾ to 1 in.	3.97c
1 to 6 in. x ¼ and 5/16	4.07c
Rods—¾ and 11/16	4.00c
Bands—1½ to 6 x 3/16 to No. 8	4.57c

### Shapes:

Beams and channels—3 to 15 in.	4.07c
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### Angles:

3 in. x ¼ in. and larger	4.07c
3 in. x 3/16 and ½ in.	4.32c
1½ to 2½ in. x ¼ in.	4.32c
1½ to 2½ in. x 3/16 in. and thicker	4.07c
1 to 1½ in. x 3/16 in.	4.12c
1 to 1½ in. x ½ in.	4.17c
¾ x ¾ x ½ in.	4.22c
¾ x ½ in.	4.27c
¾ x ¾ in.	5.07c
½ x 3/32 in.	5.77c

### Tees:

1 x ½ in.	4.47c
1½ in. x 1½ in. x 3/16 in.	4.37c
1½ to 2½ x ¼ in.	4.17c
1½ to 2½ x 3/16 in.	4.17c
3 in. and larger	4.12c

## Merchant Steel

Per lb.

Bessemer machinery	3.97c
Tire, 1½ x ½ in. and larger	3.97c
Toe calk, ½ x ¾ in. and larger	4.72c
Open-hearth spring steel	8.00c
Standard cast steel, base price	16.00c
Extra cast steel	18.00 to 20.00c
Special cast steel	23.00 to 25.00c

## Tank Plates—Steel

¼ in. and heavier	4.27c
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## Sheets

### Blue Annealed

Per lb.

No. 8 and 3/16 in.	5.12c
No. 10	5.17c
No. 12	5.22c
No. 14	5.27c
No. 16	5.37c

### Box Annealed—Black

One pass, C. R. Wood's  
soft steel, refined,  
per lb. per lb.

Nos. 18 to 20	6.02c	—
Nos. 22 and 24	6.07c	7.62c
No. 26	6.12c	7.67c
No. 27	6.17c	—
No. 28	6.22c	7.82c
No. 29	6.27c	—
No. 30	6.37c	—

Genuine Russia, as per assortment.....22½ @ 25c

Patent planished, W. Dewees Wood,

A 13 to 13¼c; B 11 to 11¼c net

### Galvanized

Per lb.

No. 14	6.67c
No. 16	6.82c
Nos. 18 and 20	6.97c
Nos. 22 and 24	7.12c
No. 26	7.27c
No. 27	7.42c
No. 28	7.57c
No. 30	8.07c

No. 28, 36 in. wide, 10c. higher.

## Corrugated Roofing, Galvanized

2½ in. corrugations, 10c. per 100 lb. over flat sheets.

## Tin Plates

### Charcoal Plates

Per box

AAA charcoal:	
IC 14 x 20	Nominal

IX 14 x 20.....Nominal

### A charcoal:

IC 14 x 20	Nominal
IX 14 x 20	Nominal

## Coke Plates—Bessemer

IC 14 x 20, 107 lb.	Nominal
IX 14 x 20	Nominal

## Terne Plates

IC 20 x 28 with an 8-lb. coating	Nominal
IX 20 x 28 with an 8-lb. coating	Nominal

## Brass Tubes, Rods and Wire, and Copper Tubes

Manufacturers have withdrawn all quotations because of unsettled prices of raw materials and will only name prices to actual buyers.

## Copper Sheets

Sheet copper, hot rolled, 16 oz., 33c. to 35c. per lb.	
Cold rolled, 14 oz. and heavier, 1c. per lb. advance over hot rolled.	
Polished, 20 in. wide and under, 1c. per sq. ft. extra over 20 in. wide, 2c. per sq. ft. extra.	
Planished copper, 1c. per sq. ft. more than polished.	
Tinning, one side, 6c. per sq. ft.	

## Copper Wire

Base price, at mill	38c
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## Tin

Straits pig	76½c
Bar	85c to 90c

## Copper

Lake Ingot	25c. to 26c.
Electrolytic	25c. to 26c.
Casting	25c. to 26c.

## Spelter and Sheet Zinc

Western spelter	10c to 11c
Sheet zinc, No. 9 base, casks	15½c; open 16c

## Lead and Solder\*

American pig lead	7½c to 8c
Bar lead	8½c to 9½c
Solder ½ & ½ guaranteed	49c
No. 1 solder	44c
Refined solder	36c

\*Prices of solder indicated by private brand vary according to composition.

## Babbitt Metal

Best grade, per lb.	90c
Commercial grade, per lb.	50c

## Antimony

Asiatic	10c to 12c
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## Bismuth

Per lb.	\$4.50 to \$5.00
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## Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting (carload lots), f.o.b. mill, per lb.	33.10c
In small lots	40 to 45c

## Old Metals

The market continues very dull. Dealers selling prices are nominally as follows:

	Cents Per lb.
Copper, heavy and crucible	16.50
Copper, heavy and wire	15.00
Copper, light and bottoms	13.00
Brass, heavy	9.50
Brass, light	8.00
Heavy machine composition	17.50
No. 1 yellow rod brass turnings	10.00
No. 1 red brass or composition turnings	15.00
Lead, heavy	5.25
Lead, tea	4.00
Zinc	5.00